

135NOW Official Origin Whitepaper • Upper Volume • Astronomical Origin

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Built on long-termism to forge a cross-time-zone, global ceremonial commercial IP

This volume answers: Where, physically, is 1-3-5? And why is it said to occur only once in 21,000 years?

Version V1.0 | Official Origin Whitepaper | Unchanged in perpetuity

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135NOW Official Origin Whitepaper • Upper

Volume • Astronomical Origin

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Core question this volume answers: Where, physically, is 1-3-5? And why is it said to occur only once in 21,000 years?

Preface: The Universe Behind the Numbers

The first layer of meaning of 135NOW — the IP's Astronomical Origin — can be stated rigorously as follows:

The encoded designation of the centennial mean perihelion epoch.

It is not a number set arbitrarily, but rather a compression of the Earth's orbital perihelion, perihelion precession, time averaging, and epoch designation into a three-digit sequence, 1-3-5, bound to NOW as a pointer toward "this moment, the present."

In other words, 1-3-5 is not a string of random digits but a cosmic archive compressed into three characters. It records: on which day and at which moment the Earth comes closest to the Sun; how rare that moment is on the timescale of the solar system; and how we — the life forms who happen to live inside this window — ought to understand our own place.

This volume will begin from the very bottom — the geometry of the Earth's orbit — and gradually build upward, until every single word of the claim "occurs only once in 21,000 years" is fully answered. Throughout, the text strictly uses standard astronomical terminology while remaining readable — we hope this text can both withstand verification by an observatory and deserve to be chewed over again and again by an ordinary person on some quiet morning.

To better understand the Astronomical Origin, let us first establish a "cognitive ladder": from the Sun's motion visible to the naked eye, to the orbit determination of the telescope era, and then to the sub-minute precision of modern ephemerides. Only by climbing this ladder can we truly understand how much effort of generations of astronomers the seemingly simple number "January 3, 5 a.m." actually carries.

Chapter 1 Keplerian Orbits: The Geometric Premise of the Perihelion

1.1 From the geocentric to the heliocentric model: the course of humanity's understanding of orbits

Before Copernicus (1473–1543) established the heliocentric system, humanity long described planetary motion with Ptolemy's geocentric model of deferents and epicycles. That model was

extremely ingenious and could predict the apparent positions of the planets with fair accuracy, but it had one fatal flaw: it was only a geometric tool that “computes well,” not a physical picture that “looks right.” It kept patching up observational errors by adding ever more epicycles, so the model grew ever more complex and ever more divorced from intuition.

Copernicus placed the Sun at the center and greatly simplified the model, yet he still used circular orbits with epicycles and could not explain the non-uniformity of planetary apparent motion on the ecliptic — especially the bizarre path of Mars, which sometimes moves faster, sometimes slower, and even briefly retrograde.

It was not until Kepler (Johannes Kepler, 1571–1630) appeared that the truth was revealed. Based on Tycho Brahe’s astronomical observations spanning more than two decades and reaching arc-minute precision, after countless trial calculations, Kepler finally set out his First and Second Laws in *Astronomia Nova* (1609), and his Third Law in *Harmonices Mundi* (1619). The elliptical truth of planetary motion was thus uncovered.

This history matters enormously for understanding the perihelion: the perihelion is not a concept invented by humans, but a real geometric point “seen” from the data in the course of humanity’s asking “how do planets actually move.”

A detail of history may be added here: the collaboration between Kepler and Tycho was full of drama. Tycho was the most outstanding observer in Europe at the time, but he clung to a geo-heliocentric compromise model; Kepler, his assistant, firmly believed in the heliocentric system. On his deathbed Tycho handed his lifelong observational data to Kepler, hoping he would prove Tycho’s own model; Kepler instead used the data to derive the heliocentric elliptical orbit. This is a classic case in the history of science of “using the most rigorous data to overturn the most authoritative framework.” The concept of the perihelion was born precisely in this great “betrayal.”

1.2 Kepler’s three laws

Kepler’s three laws constitute the cornerstone of modern orbital mechanics. Set out one by one:

First Law (the law of elliptical orbits): the orbit of a planet around the Sun is an ellipse, with the Sun at one focus.

This law directly negates the fundamental assumption of “circular orbits” that had persisted for two thousand years. The introduction of the ellipse means that the distance between planet and Sun is no longer constant — within one period it passes through the alternation of farthest and nearest points. Perihelion and aphelion are precisely the two extreme positions on this ellipse.

Here there is an easily overlooked geometric detail: an ellipse has two foci, and the Sun occupies only one of them. The other focus is empty. Why does the Earth orbit “an empty focus”? The answer lies in Newton’s universal gravitation — in the two-body problem, gravity points toward the focus occupied by the Sun, so the orbit must take that focus as one of its geometric centers.

The empty focus has no physical meaning; it is merely a by-product of the geometry of the ellipse. This concept of the “empty focus” helps us understand that the geometric properties of the elliptical orbit (focus, apsidal line, eccentricity) are the fundamental tools for understanding the position of the perihelion.

Second Law (the law of equal areas): the line joining a planet to the Sun sweeps out equal areas in equal times.

The corollary of this law is highly visual: a planet moves fastest near the perihelion and slowest near the aphelion. Because the areas are equal, the closer to the Sun the shorter the connecting line, so the planet must sweep out a longer arc to keep the area equal — hence its speed is greater. When the Earth passes perihelion in January, its speed of revolution about the Sun is about 3.4% greater than when it passes aphelion in July.

A concrete calculation: the Earth’s average orbital speed is about 29.8 km/s. Near the perihelion the speed is about 30.3 km/s; near the aphelion, about 29.3 km/s. The two differ by about 1 km/s, roughly 3.4%. This difference of 1 km/s is precisely the embodiment of the “law of equal areas” on the real Earth orbit.

Third Law (the harmonic law): the square of a planet’s orbital period is proportional to the cube of its orbital semi-major axis.

This law connects the solar system from “a heap of isolated ellipses” into “an orderly family,” and provided the most crucial empirical support for the later Newtonian mechanics and universal gravitation.

1.3 Newton and universal gravitation: from geometry to mechanics

Newton (1643–1727), in the *Principia* (1687), rigorously derived Kepler’s three laws from mechanics by means of the law of universal gravitation.

The law of universal gravitation states: the gravitational force between two point masses is proportional to the product of their masses and inversely proportional to the square of their distance:

$$F = G \cdot M_1 \cdot M_2 / r^2$$

where G is the gravitational constant, M_1 and M_2 are the masses of the two bodies, and r is the distance between them.

In the exact solution of the two-body problem, the relative-motion orbit is precisely a conic section (an ellipse, parabola, or hyperbola). The Earth’s orbit is an ellipse of very small eccentricity — precisely for this reason, the perihelion, as a geometric point that can be precisely defined and observed, is able to exist. Newtonian mechanics not only explained “why the orbit is an ellipse,” but also revealed why the ellipse slowly rotates — which lays the groundwork for the later “perihelion precession”: when a system is not a strict two-body system

but is perturbed by other bodies, the elliptical orbit is no longer closed, and the apsidal line slowly rotates about the Sun.

It is worth emphasizing: in the strict two-body problem (only Sun and Earth), the orbit is an ellipse that never rotates and is completely closed — the Earth would forever travel along the same elliptical trajectory, and the perihelion would forever point in the same direction. But in reality, the solar system contains eight planets, numerous moons, and countless small bodies; the Earth is by no means traveling alone in a vacuum. Any tiny extra gravitational perturbation breaks the ideal state of the “closed ellipse” and makes the apsidal line rotate slowly. It is precisely this “imperfection” that produces the drift of the perihelion, and with it the number “21,000 years” so full of the sense of destiny.

1.4 The six orbital elements and the position of the perihelion

The complete state of the Earth’s orbit is determined by six orbital elements:

Element	Symbol	Meaning
Semi-major axis	a	Half the major axis of the ellipse; determines the size of the orbit and the period
Eccentricity	e	The flatness of the orbit; e=0 is a circle, 0<e<1 is an ellipse
Inclination	i	The angle between the orbital plane and the ecliptic plane
Longitude of the ascending node	Ω	The longitude of the ascending node on the ecliptic
Argument of perihelion	ω	The angular distance of the perihelion from the ascending node
Mean anomaly	M	The angular parameter describing the Earth’s position on the orbit

Among them, the semi-major axis a and the eccentricity e directly determine the distances of the perihelion and the aphelion. From the geometry of the ellipse:

$$\text{Perihelion distance } r_{\text{peri}} = a \cdot (1 - e) \quad | \quad \text{Aphelion distance } r_{\text{aphel}} = a \cdot (1 + e)$$

Substituting current values, $a \approx 1.496 \times 10^8$ km and $e \approx 0.0167$:

$$r_{\text{peri}} \approx 1.496 \times 10^8 \times 0.9833 \approx 1.471 \times 10^8 \text{ km (about 0.983 AU)}$$

$$r_{\text{aphel}} \approx 1.496 \times 10^8 \times 1.0167 \approx 1.521 \times 10^8 \text{ km (about 1.017 AU)}$$

The difference between the two values is about 5×10^6 km — roughly five million kilometers. This fluctuation of five million kilometers is the entire meaning of the concept of the perihelion: it is

not merely a geometric characteristic point; it directly determines how much solar radiation the Earth receives at different times of the year.

A visual conversion may be added: five million kilometers is roughly 13 times the distance from the Earth to the Moon (about 384,000 km). In other words, the variation in how far the Earth is from the Sun over the course of a year equals the amplitude of “13 Earth–Moon distances.” Imagine that scale and you will understand that the perihelion is not “a little closer,” but a positional change on the cosmic scale that cannot be ignored.

1.5 The subtle relationship between eccentricity, the perihelion, and the seasons

One common misconception must be clarified: “the perihelion decides the seasons” is wrong.

The truth is that the seasons are determined mainly by the tilt of the Earth’s axis (the obliquity of the ecliptic, currently about $23^{\circ}26'$), not by the Sun–Earth distance. In the Northern Hemisphere January coincides with the winter solstice and is coldest, yet at that time the Earth is precisely near the perihelion; the Southern Hemisphere is the opposite, with January in full summer.

But the difference in perihelion distance is by no means negligible — it makes the solar irradiance flux the Earth receives at perihelion about 6.9% higher than at aphelion. Although this is not enough to reverse the direction of the seasons, it does modulate their intensity: the Northern Hemisphere’s winter, because the Earth happens to be closer to the Sun, is slightly milder than it would be “without perihelion modulation”; the Southern Hemisphere’s summer is accordingly slightly hotter. This subtle but observable modulation is precisely the physical root of how “climatic precession” can influence glacial periods in the later text.

In one sentence: the perihelion does not decide “which season it is,” but it does fine-tune “how strong that season is.”

This “fine-tuning,” accumulated over tens of thousands of years of climatic evolution, is amplified countless times — this is the deep reason why the perihelion in the Astronomical Origin is far more than a mere geometric point.

Chapter 2 The Precise Definition of the Perihelion and Its Contemporary Observed Values

2.1 The precise definition of the perihelion

The perihelion, also called the orbital periapsis, refers to the geometric position on the Earth’s orbit closest to the Sun — the point at which the Earth–Sun distance takes its minimum value. Its counterpart, the aphelion, is the position at which the distance takes its maximum. The line joining the two forms the principal axis of the elliptical orbit’s line of apsides.

One terminological nuance needs clarification: strictly speaking, what revolves about the Sun should be the orbit of the Earth–Moon barycenter, not simply the geocenter. But when

discussing the ephemeris computation of the perihelion, the instantaneous perihelion time is usually given separately with the geocentric or the barycentric reference; the two differ by very little (on the order of a few minutes). After the centennial averaging is applied for the IP anchor, this difference is completely averaged away and does not affect the benchmark.

The concept of the barycenter deserves a few more words: the Moon's mass is about 1/81 of the Earth's. When the Earth–Moon system moves around the Sun, what really travels along the elliptical orbit is neither the “geocenter” nor the “selenocenter” but their center of mass — the barycenter. Because of the Moon, the barycenter is displaced from the geocenter by about 4,700 km (a little more than one Earth radius). Although this displacement is not small on the scale of the Earth, in front of the 147-million-kilometer Sun–Earth distance it is a drop in the ocean. Therefore, when discussing the perihelion, the difference between the geocentric and barycentric references (on the order of minutes) can be completely ignored.

2.2 Contemporary reference values in the ephemeris

Taking modern high-precision ephemerides (such as the JPL DE series from NASA's Jet Propulsion Laboratory) as the standard, the reference values for the Earth's perihelion passage are:

Orbital characteristic point	Approximate date	Sun–Earth distance	In astronomical units
Perihelion	Around January 3 each year	$\approx 1.471 \times 10^8$ km	≈ 0.983 AU
Aphelion	Around July 5 each year	$\approx 1.521 \times 10^8$ km	≈ 1.017 AU

From the above data, the intra-year variation of the Sun–Earth distance is about 5×10^6 km, corresponding to an irradiance-flux difference of about 6.9%. This percentage is approximately determined by the eccentricity: the irradiance ratio is roughly the difference between $(1+e)/(1-e)^2$ and 1, which at $e=0.0167$ is about 6.9%.

A recent specific datum may be added (CycleCalcs): the Earth's next perihelion passage will be around January 3, 2027, when the Sun–Earth distance will be about 147,104,259 km. This figure precise to the kilometer is a testament to the capability of modern ephemerides.

2.3 The perihelion's “instantaneity” and its inter-annual fluctuation

Strictly speaking, the Earth does not pass perihelion at the same moment of the same day every year. Affected by various perturbations, the instantaneous perihelion time exhibits obvious inter-annual fluctuations: the Moon's tidal force, the long-term gravitation of giant planets such as Jupiter and Saturn, and the change in the orientation of the Earth's rotation axis all cause the perihelion fall point to drift by several days on the Gregorian calendar date.

Taking the aphelion as an example (HandWiki observational data): the aphelion in 2025 was July 3, and in 2026 it will be July 6 — adjacent years can differ by up to three days. The perihelion is likewise subject to a similar inter-annual scatter.

This inter-annual fluctuation is precisely the most direct evidence for the necessity of “centennial averaging.” Imagine: if this year’s perihelion is January 3, next year January 4, and the year after that it returns to January 2 — then which should we take as the ritual anchor? The answer is none of them. What we need is a “mean position” that crosses the short-term fluctuations and keeps only the long-term trend. This is precisely why 135NOW adopts “centennial averaging.”

2.4 Further clarification of the “mean point”

The phrase “the centennial mean perihelion point” easily gives rise to two misunderstandings in everyday speech, which are clarified here together:

Misunderstanding one: does “the mean point” mean that within 100 years there is only one day that is the “mean day”?

No. It is “the representative point obtained by averaging” — a symbol of the “central tendency” of the perihelion fall points of this century. It is not an event that really happens, but a benchmark of statistical significance. Just as “average height” is not any particular person’s height, “the mean perihelion time” is not the real perihelion time of any particular year.

Misunderstanding two: since an average is taken, does the perihelion of any particular year still have meaning?

It does. The mean point is used to “anchor the IP” (stable, celebratable); the particular year’s perihelion is used for “astronomical observation” (precise, real-time). The two serve different purposes. What 135NOW celebrates outwardly is that stable, unchanging mean anchor; what observatories predict is the precise instantaneous time of each year.

Chapter 3 Perihelion Precession: The Mechanical Mechanism of the Apsidal Rotation

3.1 What perihelion precession is

Perihelion precession, also called apsidal precession or apsidal-line precession, refers to the phenomenon in which the apsidal line (the perihelion-aphelion line) of the Earth’s elliptical orbit slowly rotates on the ecliptic plane.

In other words, the Earth’s orbit is not a fixed ellipse; the direction of its major axis slowly rotates about the Sun, and the longitude of the perihelion keeps changing accordingly. This means that the statement “the Earth passes perihelion on January 3,” true today, was not true several thousand years ago and will not be true several thousand years from now — the perihelion’s fall point on the Gregorian calendar is continually drifting.

We can use an analogy to help understanding: imagine a coin rolling on a table. The coin’s “orbit” (the circumference) itself also slowly rotates, just as the Earth’s elliptical orbit slowly rotates on the ecliptic plane. After the coin rolls a few turns, the orientation of its “perihelion”

(some particular marked point) on the table changes a little. The Earth's perihelion is exactly such a marked point slowly "spinning" around in the solar system.

3.2 Three driving mechanisms

Perihelion precession is the superposition of three mechanisms:

1. Planetary perturbation

Chiefly the long-term gravitational disturbance of the Earth's orbit by giant planets such as Jupiter and Saturn, which makes the longitude of the perihelion drift periodically. Jupiter's mass is about 318 times the Earth's, and it is the main source of perturbation; Saturn, about 95 times, is the second main source. The superposition of the two determines the principal rate of advance of the perihelion longitude.

2. Lunar perturbation

The coupled motion of the Earth-Moon system's barycenter superimposes a short-period oscillation. The Moon's mass is about 1/81 of the Earth's; its presence means that the geocentric orbit is not strictly the barycentric orbit, producing a subtle periodic correction.

3. Axial precession

Because of the gravitational torque of the Sun and the Moon on the Earth's equatorial bulge, the rotation axis undergoes a conical precession, and the vernal equinox retreats accordingly, indirectly affecting the relative phase of the perihelion and the equinox. This differs from "apsidal-line rotation": what it changes is the position of the equinox, not the perihelion itself — but when we discuss "the date of the perihelion on the Gregorian calendar," the movement of the equinox (the basis of the tropical year) is equally crucial.

3.3 The rates of motion of the apsidal line and the equinox line

In astronomy, two sets of motion must be strictly distinguished:

The drift of the apsidal line relative to the fixed stars: the longitude of the perihelion advances relative to the fixed-star background at a rate of about $+11.612''$ (arcseconds) per year. On this basis, the apsidal line takes about 111,915 Julian years to complete one full circle (Paris Observatory IMCCE data).

The retrograde of the equinox line relative to the fixed stars: the vernal equinox (the equinox line) retrogrades along the ecliptic at about $-50.388''$ per year; this is the direct manifestation of precession. The equinox line takes about 25,772 years to complete one full circle (the great precession cycle).

When the perihelion and the equinox are placed side by side, their relative phase coincides once every about 20,903 Julian years. This period is called climatic precession, and it is precisely the exact source of our "21,000 years."

3.4 The apparent effect: the rate of calendar-date drift

The visible manifestation of perihelion precession on Earth is the continual drift of the perihelion within the system of Gregorian calendar days. The measured mean rate is approximately: every 58 Julian years, the perihelion advances by one Gregorian calendar day (EarthSky data).

This means that over a long span of time, the perihelion date slowly migrates westward on the Gregorian calendar at a rate of “about 1.7 days per century.” For example, in the present (21st) century the perihelion falls on January 3; push back more than a dozen centuries and the perihelion falls in mid-January; push forward more than a dozen centuries and it slides toward December. This slow but continuous movement is the physical basis of the “century statistics table” below.

The direction of the “advance” must be emphasized: the date of the perihelion on the Gregorian calendar grows earlier and earlier with the passage of time (January 3 → January 2 → January 1 → December 31 ...), until after one full circle it returns to January 3. This “moment of returning to the origin” is roughly 21,000 years later. So “it reappears only after 21,000 years” means that the combination of “the same calendar date + the same seasonal phase” requires one complete circle to recur.

3.5 The famous connection with general relativity

Perihelion precession carries one of the most famous stories in the history of physics: the anomalous precession of Mercury’s perihelion.

According to Newtonian mechanics, after all planetary perturbations are considered, Mercury’s perihelion should precess by about 531 arcseconds per century; but the observed value is about 574 arcseconds, and the excess of about 43 arcseconds cannot be explained by Newtonian theory. In 1915, Einstein’s general relativity predicted that gravitation would cause an additional precession of the perihelion, of exactly about 43 arcseconds per century — matching observation perfectly. This achievement made Einstein famous overnight and made “perihelion precession” a touchstone for testing the theory of spacetime.

Although the Earth’s perihelion precession is dominated by planetary perturbation and precession (the relativistic correction is small), this history tells us: “perihelion precession” is not a marginal piece of trivia but one of the core pieces of evidence of modern physics. When we celebrate 135NOW’s “21,000 years,” we are in fact celebrating a profound physical phenomenon that runs through Newtonian mechanics, general relativity, and planetary dynamics.

Chapter 4 Three Key Timescales: Anomalistic Year • Tropical Year • Precession Period

This is the place in the entire Astronomical Origin most prone to confusion and most in need of rigorous distinction. Please be sure to separate the three concepts below; together they determine the entire meaning of the 135NOW astronomical anchor.

4.1 The anomalistic year

Definition: the time interval between two successive passages of the Earth through the perihelion.

Measured value: about 365.2596 days (Purple Mountain Observatory, Basic Terms of the Almanac: “the time interval between two successive passages of the Sun through perigee is called one anomalistic year”).

Significance: it guarantees the basic fact that every year the Earth reaches the perihelion once. This is a “year-scale” event — it happens every year and never misses a year.

The word “anomalistic” derives from Greek, meaning originally “non-uniform,” because it corresponds to the orbital period defined by the non-uniform speed of the planet (fast at perihelion, slow at aphelion). The very name carries the historical imprint of humanity’s discovery that “orbital motion is non-uniform.”

4.2 The tropical year

Definition: the time interval between two successive passages of the Sun through the mean vernal equinox.

Measured value: about 365.2422 days.

Significance: the tropical year is the basis of seasonal calibration in the Gregorian calendar and the benchmark of civil calendars. The north–south migration of the subsolar point and the alternation of the four seasons are all reckoned by the tropical year. The difference between the anomalistic year and the tropical year (about 0.0174 days per year) originates precisely in the phase drift between the perihelion and the equinox — this is the source of the perihelion “advancing one day every 58 years” on the Gregorian calendar.

4.3 The perihelion precession period (the apsidal precession cycle)

Definition: the time required for the perihelion to complete one full circuit on the ecliptic relative to the equinox.

Measured value: about 20,903 Julian years, loosely called 21,000 years in engineering and popular-science terms.

4.4 The sidereal year: a fourth kind of year

For completeness, the sidereal year must be added: the time for the Earth to complete one revolution relative to the fixed-star background, about 365.2564 days. It is about 20 minutes longer than the tropical year; the difference originates in the westward motion of the equinox caused by precession.

Year type	Reference	Length (days)
Tropical year	Mean vernal equinox	365.2422
Sidereal year	Fixed stars	365.2564

Anomalistic year	Perihelion	365.2596
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The ordering of the lengths and physical meanings of the three kinds of “year” deserve careful thought:

The tropical year is the shortest (365.2422 days), because it uses the “equinox” as its reference, and the equinox is retrograding — the Earth takes the shortest time to “chase” the equinox;

The sidereal year is in the middle (365.2564 days), with the fixed stars as reference;

The anomalistic year is the longest (365.2596 days), because it uses the “perihelion” as its reference, and the perihelion is advancing — the Earth must travel a little farther to catch up again.

These subtle differences among the three are precisely the projection onto the “length of a year” of the two opposing motions of “the equinox retreating and the apsidal line advancing.”

4.5 The relationship among the three (the core conclusion)

Placing the three concepts back into the context of 135NOW:

The perihelion is passed every year (determined by the anomalistic year); but the specific combination of “the perihelion exactly falling on January 3 of the Gregorian calendar, UTC 05:00” — this particular calendar-date-instant-orbital-phase combination — is a window that appears only briefly on the 21,000-year scale (determined by apsidal precession).

Verify with arithmetic: to push the perihelion one full circle through the Gregorian calendar and return to exactly today’s calendar date and seasonal phase, one needs:

$$58 \text{ years/calendar-day} \times 365.25 \text{ calendar-days/circle} \approx 21,200 \text{ years}$$

This result is in high agreement with the 20,903 years given by the IMCCE; two independent sources corroborate each other.

Conclusion: the “January 3, 5 a.m.” anchor on which you now stand is, on the scale of the solar system, a once-in-a-lifetime space-time coordinate — it reappears in its original form only about once every 21,000 years. This is the hard, unshakable support behind the “once in a thousand years” mood of “ascend high, await the sun, race toward mountains and seas.”

Chapter 5 Centennial Averaging: From the Instantaneous to the Mean Position

5.1 Why centennial averaging is needed

As stated above, the instantaneous perihelion time can fluctuate by several days between years under short-term perturbations. If one directly took the perihelion date of some particular year as the IP anchor, it would drift with the year and could not constitute a stable ritual benchmark. A statistical average is therefore introduced:

Centennial mean perihelion time = the stable epoch obtained by time-averaging the instantaneous perihelion times of each year over a consecutive century.

This process is equivalent to applying a low-pass filter to the time series: it filters out the discrete gravitational shifts caused by the Moon and the giant planets (high-frequency components), while preserving the long-term trend of perihelion precession (the low-frequency component). It therefore has reference value across centuries.

5.2 The continuity with the compilation idea of “mean orbital elements”

In the compilation of astronomical ephemerides, this practice is directly continuous with the compilation idea of “mean orbital elements” — using mean quantities to characterize long-term behavior and instantaneous quantities to describe specific moments. For example, the orbital elements of asteroids and comets are often given as both “mean elements” (for long-term prediction) and “instantaneous elements” (for a precise epoch). 135NOW’s “centennial mean perihelion time” is precisely the application of this astronomical compilation idea to the design of a cultural anchor.

5.3 The strict one-to-one correspondence of the three digits of 1-3-5

Thus 1-3-5 acquires a rigorous digit-by-digit correspondence:

1 = the first month of the Gregorian calendar (month = January)

3 = the 3rd day of the Gregorian calendar (day = 3rd)

5 = 05:00 Coordinated Universal Time (UTC 05:00)

That is: the benchmark instant of the centennial mean perihelion $\approx$ January 3 each year, UTC 05:00. This is precisely the time anchor gripped by the “ascend high, await the sun” ritual — in the deepest part of pre-dawn, at the moment when in most time zones of the world the astronomical twilight is passing into morning light, best suited for ascending high and awaiting the sunrise.

5.4 The multiple meanings of the “mean point”

The word “mean point” has three layers of meaning in this volume, worth stating explicitly:

Time averaging: take the average of the century’s instantaneous perihelion times to filter out inter-annual noise.

Position averaging: the mean position of the perihelion on the ecliptic, excluding short-term perturbation shifts.

Epoch averaging: serve as a cross-century stable reference epoch, rather than the concrete event of a particular year.

These three layers jointly support the positioning of 1-3-5 as a “stable anchor” rather than a “drifting event.”

Chapter 6 Statistical Table of Perihelion Fall Points Across Ten Centuries Before and After

6.1 Description of the computational model

With January 3, 2027 (the perihelion, the reference of the cycle computation) as the anchor, and using “one calendar-day advance every 58 Julian years” to extrapolate both backward and forward, taking the midpoint of each century as the representative, we obtain the Gregorian-calendar fall points of the instantaneous perihelion. It should be noted: this model is based on a linear drift rate and ignores the inter-annual fluctuations of short-term perturbations; it is used to display the long-term trend rather than precise single-year values.

6.2 The century statistics table

Century	Century midpoint	Calendar-day shift relative to 2027	Instantaneous perihelion calendar day (mid-century)
11th century	1050	−16.8 days	January 19
12th century	1150	−15.1 days	January 18
13th century	1250	−13.4 days	January 16
14th century	1350	−11.7 days	January 14
15th century	1450	−10.0 days	January 12
16th century	1550	−8.2 days	January 11
17th century	1650	−6.5 days	January 9
18th century	1750	−4.8 days	January 7
19th century	1850	−3.1 days	January 6
20th century	1950	−1.3 days	January 4
21st century (now)	2050	+0.4 days	January 2–3 (anchor)
22nd century	2150	+2.1 days	December 31
23rd century	2250	+3.8 days	December 30
24th century	2350	+5.6 days	December 28
25th century	2450	+7.3 days	December 26
26th century	2550	+9.0 days	December 24
27th century	2650	+10.7 days	December 23
28th century	2750	+12.5 days	December 21
29th century	2850	+14.2 days	December 19
30th century	2950	+15.9 days	December 18
31st century	3050	+17.6 days	December 16

6.3 Key points for reading the table

We happen to live exactly at the center of the bull's-eye of this 21,000-year curve.

In the ten centuries before, the perihelion moved century by century from mid-to-late January, drawing ever closer to January 3;

In the ten centuries after, it will advance century by century and slide toward December;

The 21st century is the narrow window within the entire precession cycle in which the centennial mean perihelion and the pre-dawn instant of January 3 of the Gregorian calendar coincide most closely.

This is no coincidence but the deep reason 135NOW chose 1-3-5: we are the generation that stands at the “exact center” of this 20,000-year curve. Those who came before did not catch the most accurate anchor; those who come after will have missed it — only we stand at the bull’s-eye.

6.4 Extended interpretation of the statistics table

Another value of this table is that it turns “21,000 years” from an abstract number into a timeline that can be touched century by century. When you see “the 11th-century perihelion was on January 19” and “the 31st-century on December 16,” “21,000 years” is no longer a cold, huge number but a warm migration: the perihelion, like a slow train, travels along the Gregorian calendar from mid-January all the way to December, taking about 21,000 years before returning again to the January 3 platform.

And we are standing precisely at the position on this “solar train” closest to the “January 3” platform.

Chapter 7 Multiple Equivalent Expressions of the Anchor

The same set of astronomical references can be equivalently stated in several forms, in the language of different disciplines, with completely identical content:

Orbital-mechanics expression: the centennial mean perihelion epoch.

Calendar-time expression: January 3 of the Gregorian calendar, 05:00 Coordinated Universal Time (UTC).

Ritual-imagery expression: the space-time reference of ascending high and awaiting the sun — the deepest point of pre-dawn.

Coded-designation expression: the 1-3-5 sequence code (1 = January, 3 = the 3rd, 5 = 5 o’clock UTC).

Geological/evolutionary expression: the narrow central window of the 21,000-year apsidal precession cycle (a rare phase on the geological timescale).

The five expressions do not conflict; they are merely projections of the same physical reference onto different dimensions. For IP dissemination, the orbital-mechanics expression serves as the authoritative definition, and the others as convenient expressions.

This “one anchor, many expressions” design precisely embodies the inclusiveness of 135NOW: with the same 1-3-5, an observatory reads “the mean perihelion time,” an ordinary person reads “January 3, 5 a.m.,” a man of letters reads “the moment closest to the Sun,” and a communicator reads “once in 21,000 years.” Every reading is correct, because they all speak of the same thing.

Chapter 8 Glossary of Related Astronomical Terms

For ease of citation and dissemination, the core terms involved in this Astronomical Origin are collected here with Chinese–English equivalents:

Chinese	English	Meaning
近日点	perihelion	The geometric point on the orbit closest to the Sun
远日点	aphelion	The geometric point on the orbit farthest from the Sun
拱线	line of apsides	The line joining the perihelion and the aphelion, i.e. the major axis of the ellipse
近日点进动	perihelion precession	The slow rotation of the apsidal line on the ecliptic plane
近点年	anomalistic year	The interval between two successive perihelion passages, ≈ 365.2596 days
回归年	tropical year	The interval between two successive passages through the mean vernal equinox, ≈ 365.2422 days
恒星年	sidereal year	One revolution relative to the fixed stars, ≈ 365.2564 days
岁差	axial precession	The conical precession of the Earth’s rotation axis, causing the equinox to retreat
气候岁差	climatic precession	The phase cycle of the perihelion relative to the equinox, $\approx 20,903$ years
摄动	perturbation	The gravitational disturbance of other bodies on the Earth’s orbit
历元	epoch	The reference time corresponding to astronomical orbital elements
偏心率	eccentricity	The flatness of the orbit; currently $e \approx 0.0167$

黄赤交角	obliquity	The tilt of the Earth's axis, currently about 23°26'
平春分点	mean equinox	The mean vernal equinox after the removal of nutation
儒略年	Julian year	365.25 days, the standard astronomical unit of time
世界协调时	UTC	The globally unified time reference
地月系质心	Earth-Moon barycenter	The center of mass of the Earth-Moon system

Chapter 9 The Grander Background: Milankovitch Cycles

9.1 The long-term variation of the three orbital parameters

To understand why perihelion precession matters, one must place it within the framework of the Milankovitch cycles. The Serbian mathematician Milutin Milanković (1879–1958) proposed that the alternation of glacial and interglacial periods on Earth is driven chiefly by the long-period variation of three orbital parameters:

The eccentricity cycle (about 100,000 years): the flatness of the orbit oscillates between nearly circular and more elliptical, affecting the Sun–Earth distance and the seasonal distribution of irradiance.

The obliquity cycle (about 41,000 years): the tilt of the Earth's axis oscillates between 22.1° and 24.5°, changing the seasonal temperature contrast.

The perihelion precession / climatic precession cycle (about 21,000 years): the phase drift of the perihelion relative to the equinox changes how strongly each season receives solar radiation.

9.2 The perihelion's role in glacial theory

Of these, the third is precisely the framework on which our “21,000-year cycle” rests. Whether the perihelion falls in January or in the seasonal phase of July affects the irradiance intensity of the Northern Hemisphere's winter and summer, and thereby participates in the modulation of glacial–interglacial periods.

The specific mechanism: when the perihelion falls in the Northern Hemisphere's summer (and the aphelion in winter), the Northern Hemisphere's summer is closer to the Sun, ice sheets melt more readily, and interglacial periods tend to appear; when the perihelion falls in the Northern Hemisphere's winter, summer is farther from the Sun, ice sheets accumulate more readily, and glacial periods tend to strengthen. This “seasonal phase of the perihelion” on its 21,000-year cycle is one of the key parameters for understanding the oscillation of the Earth's climate over the past million years.

9.3 The significance of 1-3-5 on the climatic scale

135NOW's astronomical anchor is not merely a romantic ritual time; it is also a real operative parameter of the Earth's climate system. We now stand in the window where the perihelion coincides with January 3 of the Gregorian calendar, exactly at a particular phase of the climatic precession cycle. Although this phase's influence on the contemporary climate is far smaller than the greenhouse effect brought about by human activity, it reminds us: the climate on which humanity depends has evolved by superimposition on a series of long-period astronomical rhythms — 135NOW brings this cosmic-scale background into everyone's daily life.

9.4 The scientific standing of the Milankovitch cycles

The Milankovitch cycles are not pure theory but are supported by solid observational evidence. The oxygen-isotope records in deep-sea sediments and the changes in gas composition in Antarctic ice cores both show periodicities of about 100,000, 41,000, and 21,000 years — periods that match the predictions of the three orbital parameters highly closely. For this reason, Milankovitch theory has become the mainstream framework for explaining the Quaternary glacial-interglacial cycles. 135NOW's "21,000 years" is one link in this chain of periodic evidence recognized by the global climatological community.

Chapter 10 History of Observation: How Humanity Measured the Perihelion

10.1 From the naked eye to precision ephemerides

The perihelion was not discovered "by feel" but through the accumulation of generations of astronomical observation. Its history of measurement broadly proceeds in four stages:

Stage one (ancient, pre-Christian era): the astronomers of ancient Greece and Babylon, by measuring the apparent motion of the Sun on the ecliptic, had already vaguely sensed that "the Sun's speed is not uniform" — the Sun moves fast in winter and slow in summer. But constrained by the geocentric framework, they explained this phenomenon with eccentric-circle models and had not yet formed an explicit concept of the perihelion.

Stage two (the Kepler era, 17th century): using the precise observational data of Mars, Kepler first explained the non-uniformity of planetary speed with the model of "the Sun at the focus of the ellipse and the planet moving on the ellipse." "Perihelion-aphelion" was formally established as explicit geometric concepts.

Stage three (Newton and perturbation theory, 18th–19th century): after Newtonian mechanics was established, astronomers not only knew the perihelion existed but could compute its drift due to perturbation. Lagrange, Euler, and others developed perturbation theory and could predict the long-term change of the perihelion longitude. In the 19th century, Le Verrier and others, while studying the precession of Mercury's perihelion, found that the observed value exceeded the Newtonian prediction by 43 arcseconds per century — this "anomalous

precession” was ultimately perfectly explained by Einstein’s general relativity, becoming a key piece of evidence for validating relativity.

Stage four (modern precision ephemerides, 20th century to the present): with radar ranging, lunar laser ranging, planetary probes, very-long-baseline interferometry (VLBI), and other modern techniques, humanity’s measurement precision of the Earth’s orbital parameters has reached an extremely high order of magnitude. The JPL DE series and the Paris Observatory IMCCE ephemerides provide sub-minute precision for the perihelion time. 135NOW’s “centennial mean perihelion time” is built precisely on this observation accumulated generation after generation.

10.2 The precession of Mercury’s perihelion: relativity’s famous verification

Worth setting out as a separate section: the anomalous precession of Mercury’s perihelion is one of the most famous experimental verifications in the history of physics. According to Newtonian mechanics, after all planetary perturbations are considered, Mercury’s perihelion should precess by about 531 arcseconds per century; but the observed value is about 574 arcseconds, and the excess of about 43 arcseconds cannot be explained by Newtonian theory. In 1915, Einstein’s general relativity predicted that gravitation would cause an additional precession of the perihelion, of exactly about 43 arcseconds per century — matching observation completely. This achievement made Einstein famous overnight and made “perihelion precession” a touchstone for testing the theory of spacetime.

10.3 From Mercury to the Earth: the shared physics of the perihelion

Although Mercury’s perihelion precession is dominated by relativistic effects (because it is close to the Sun and its orbit has a large eccentricity), while the Earth’s is dominated by planetary perturbation and precession, the physical essence of the two is the same: the apsidal line of the orbit rotates whenever the system departs from a strict two-body system. Understanding this helps one grasp more deeply the fundamental fact that underlies the 135NOW astronomical anchor — “the perihelion drifts on the Gregorian calendar.”

10.4 Milestones of modern ephemeris technology

Several key milestones in the building of modern high-precision ephemerides are worth recording:

1960s: lunar radar ranging and planetary radar ranging raised the measurement precision of the Sun–Earth distance to the “kilometer” order for the first time.

1970s: JPL began publishing the DE-series numerical ephemerides, solving the motion of the solar system’s bodies simultaneously by numerical integration.

1990s to the present: the precision tracking data of planetary probes (such as Voyager, Galileo, and Cassini) have continually refined the ephemeris parameters, pushing the prediction precision of the perihelion time to the minute order or higher.

It is these milestones that give an anchor such as “January 3, 5 a.m.” the confidence to be precise to the “minute.”

Chapter 11 A Worked Calculation: From Basic Data to “21,000 Years”

11.1 Summary of the basic data

Parameter	Value	Source / basis
Semi-major axis a	$\approx 1.496 \times 10^8$ km	Definition of 1 AU
Eccentricity e	≈ 0.0167	Contemporary mean value
Perihelion distance	$\approx 1.471 \times 10^8$ km	$a \cdot (1 - e)$
Aphelion distance	$\approx 1.521 \times 10^8$ km	$a \cdot (1 + e)$
Anomalistic year	365.2596 days	Almanac definition
Tropical year	365.2422 days	Almanac definition
Anomalistic year – tropical year	0.0174 days/year	Difference
Calendar-day advance cycle	≈ 58 Julian years/calendar-day	EarthSky
Perihelion precession cycle	$\approx 20,903$ Julian years	IMCCE
Simplified estimate cycle	$\approx 21,200$ years	58×365.25

11.2 Two independent derivations of “21,000 years”

Path A (rate derivation): $58 \text{ Julian years/calendar-day} \times 365.25 \text{ calendar-days/circle} \approx 21,200$ years.

Path B (precession cycle): the relative precession of the perihelion with respect to the equinox has a cycle of $\approx 20,903$ Julian years.

Two independent paths converge on “about 21,000 years,” corroborating each other, so their credibility is extremely high. This is also the basis on which 135NOW dares to proclaim “occurs only once in 21,000 years” — it is not marketing rhetoric but a fact with precise astronomical support.

11.3 The specific epoch of the current anchor

Taking the 21st century as an example, with the century midpoint of 2050, the shift relative to 2027 (the perihelion reference year) is only +0.4 days, and the perihelion fall point still lies within the “January 2–3” interval. This window is precisely the century in which the centennial mean perihelion coincides most closely with January 3, UTC 05:00, of the Gregorian calendar.

11.4 The weight and boundary of the calculation

Honesty requires stating: the above calculation rests on the linear approximation of “one calendar-day advance every 58 years.” The true perihelion date is also modulated by nonlinear factors such as the change of the eccentricity and the obliquity, which superimpose periodic oscillations on the linear trend. The “precise calendar days” in this century table should therefore be understood as trend values rather than absolute predictions. But for understanding

the core conclusion — “the perihelion slowly migrates westward along the Gregorian calendar and completes one full circle in about 21,000 years” — the linear model is already clear and reliable enough.

Chapter 12 Calendar Background: The Gregorian Calendar, Time Zones, and the Choice of “5 o’clock”

12.1 The Gregorian calendar and the tropical year

The calendar year of the current Gregorian calendar (established in 1582) is designed to approximate the tropical year (365.2422 days): a common year has 365 days, with one leap day every four years (+1 day), but century years are not leap years unless divisible by 400. This set of leap-year rules makes the mean length of the Gregorian year about 365.2425 days, so that the error against the tropical year accumulates to one day only in about 3,300 years. 135NOW’s “January 3” fall point is determined precisely within this widely adopted Gregorian framework.

12.2 Time zones and Coordinated Universal Time (UTC)

The “5 o’clock” must be bound to a globally unified time reference; otherwise it would be a different moment in different time zones. 135NOW therefore adopts Coordinated Universal Time (UTC): the Earth’s longitudes are divided into 24 time zones, and UTC is the reference time at the 0° meridian (the prime meridian). Adopting UTC 05:00 means this moment is a globally unified absolute instant, not the local time of any particular time zone.

12.3 Why UTC 05:00 rather than some other moment

Choosing UTC 05:00 is a compromise between “astronomical significance” and “ritual significance”:

Astronomically: the instantaneous moment of the centennial mean perihelion actually falls at some moment within a day (varying by year); taking its whole-hour approximation as 05:00 makes it easy to remember and disseminate.

Ritually: UTC 05:00, for the vast majority of the world’s densely populated regions, happens to fall around dawn — the Western Hemisphere (such as the Americas) is in late night to early morning of the previous night, and the Eastern Hemisphere (Eurasia and Africa) in early morning to late morning. It symbolizes the transitional instant when “the world is moving from night toward light,” highly consistent with the theme of “ascending high and awaiting the sun.”

12.4 A note on the epoch

In astronomy, an “epoch” refers to the reference time corresponding to a set of orbital elements, usually marked by something such as J2000.0 (January 1, 2000, 12:00 TT). 135NOW’s “January 3, 5 a.m.” may be regarded as a cultural epoch: it fixes an astronomical mean time into a symbol that can be repeatedly pointed to and repeatedly celebrated. This epoch does not change with the year (because it represents the “centennial mean”), and thereby acquires cross-century stability.

Chapter 13 The IP Significance of the Astronomical Origin: Bringing the Universe into Daily Life

13.1 Its position among the three origins

135NOW's complete spiritual skeleton is made up of three layers:

First layer · Astronomical Origin (this volume): the physical “where” and “when.”

Second layer · Humanities Origin: the spiritual “why” and “how.”

Third layer · Carnival Origin: the “togetherness” and “celebration” of time.

The Astronomical Origin is the root — it provides the hardest, most unshakable factual foundation of the whole IP. Without this layer, the spiritual and carnival layers that follow are merely floating rhetoric.

13.2 The four things the Astronomical Origin gives the IP

Authenticity: 1-3-5 is not a number made up on a whim but a fact with precise astronomical support.

Scarcity: occurring once in 21,000 years endows the IP with a cosmic-scale sense of rarity.

Stability: with centennial averaging, the anchor does not drift with the year and can be celebrated for a long time.

Poetry: perihelion = closest to the Sun; in itself it is an extremely beautiful image.

13.3 The boundary with folk re-creation

The boundary must again be declared: this volume (the Astronomical Origin) is the official first pillar, unchanged in perpetuity. The Chinese homophone “Yisheng Wunao” (a life without overthinking) and the English phonetic homophone “Won-Free-Vibe” are both folk-derived memes serving dissemination; they in no way override or replace this Astronomical Origin. The origin will always be that perihelion which, on the 21,000-year scale, is now coinciding with the dawn of January 3.

Chapter 14 Perihelion and Sunrise: The Bridge from Physics to Poetry

14.1 Why “closest to the Sun” and “waiting for sunrise” are naturally linked

The final step of the Astronomical Origin is to understand the inner connection between the “perihelion” and “ascending high, awaiting the sun.” These seem to be two topics — one is orbital mechanics, the other an everyday ritual — but they share the same core image: drawing near to the Sun.

The perihelion is the moment when the Earth is closest to the Sun in a year; sunrise is the moment of a day when the Sun is closest, when sunlight first strikes directly. Both point to the

act of “drawing near to the light.” 135NOW superimposes the “perihelion” (the astronomical scale) and “sunrise” (the daily scale) onto the same 1-3-5 anchor, joining the two scales into one: at this year’s perihelion moment, ascend high and await this day’s sunrise closest to the Sun. This is the perfect meshing of astronomy and daily life.

14.2 The January sunrise: why it is the best metaphor for “new beginnings”

In the Gregorian calendar, January is the month of all “new beginnings” — the first month of the new year, the starting point of the cycle of the four seasons. And January 3, 5 a.m., happens to fall in the period when “the new year has just passed and the calendar is still brand new.”

Ascending high and awaiting the sun at this moment waits for the “newest” sunrise of the year. It symbolizes not merely “today begins,” but “this year begins anew.” This psychological cue gives the 1-3-5 sunrise a double sense of “restart” — it is both the Earth’s perihelion and humanity’s new starting point.

14.3 The confidence the Astronomical Origin provides for “ascending high, awaiting the sun”

If “ascending high, awaiting the sun” were merely a man-made ritual, its power to move would be limited; but when it is rooted in the real astronomical fact of the “perihelion,” it gains a confidence that cannot be shaken. You may doubt a slogan, but you cannot doubt the fact that the Sun is closest to the Earth in January. The significance of the Astronomical Origin is to give every ritual action of 135NOW a universe standing behind it as support. This is exactly the meaning of “the deeper the root is planted, the farther the branches reach.”

Chapter 15 Clearing Up Common Misconceptions: Eight Myths About the Perihelion and 21,000 Years

To ensure the Astronomical Origin is accurately understood, the eight most common misconceptions are clarified together below:

Misconception one: “the perihelion decides the four seasons.”

Wrong. The four seasons are decided by the tilt of the Earth’s axis (the obliquity of the ecliptic); the perihelion only fine-tunes the intensity of the seasons and does not decide their direction.

Misconception two: “January 3, 5 a.m. every year is the perihelion.”

Not entirely true. The instantaneous perihelion time fluctuates slightly every year; 1-3-5 is the reference point obtained by “centennial averaging,” not the precise time of each year.

Misconception three: “after 21,000 years the Earth will have a special perihelion event.”

Not entirely true. The perihelion occurs every year; “21,000 years” refers to the recurrence of the combination of “the same calendar date + the same seasonal phase,” not a “first appearance.”

Misconception four: “perihelion precession is fast and visible to the naked eye.”

Wrong. The perihelion moves only one day on the Gregorian calendar every 58 years; in a lifetime (about 80 years) one can see only about 1.4 days of movement, almost impossible to perceive with the naked eye.

Misconception five: “perihelion precession and axial precession are the same thing.”

Not entirely true. Perihelion precession is the rotation of the apsidal line (advancing); axial precession is the retreat of the equinox. The two move in opposite directions and have different periods, but together they determine “the date of the perihelion on the Gregorian calendar.”

Misconception six: “21,000 years is a marketing gimmick.”

No. It is an astronomical fact supported by two independent sets of data: the Paris Observatory (IMCCE) perihelion precession cycle (about 20,903 years) and the EarthSky calendar-day drift rate (one day every 58 years).

Misconception seven: “waiting 21,000 years makes everything recur, including exactly the same seasons.”

Roughly right, but being precise to “exactly the same” is almost impossible, because the eccentricity and the obliquity are also changing slowly. What recurs after 21,000 years is the main feature of “the perihelion calendar date + the seasonal phase.”

Misconception eight: “the perihelion’s influence is small and can be ignored.”

Its influence on climatic seasons is small, but its influence on the long-period evolution of glacial–interglacial periods is major (the Milankovitch cycles). On the human timescale, its ritual significance far exceeds its physical influence.

Chapter 16 Data Appendix: Master Table of Key Astronomical Parameters

For easy reference and citation, all the key data involved in the Astronomical Origin are summarized below:

Parameter	Value	Unit	Note
Mean Sun–Earth distance (1 AU)	1.496×10^8	km	Definition of the astronomical unit
Orbital eccentricity e	0.0167	dimensionless	Current value
Obliquity of the ecliptic	$23^\circ 26'$	degrees-minutes	Current value
Perihelion distance	1.471×10^8	km	$a \cdot (1 - e)$
Aphelion distance	1.521×10^8	km	$a \cdot (1 + e)$
Perihelion–aphelion distance difference	5.0×10^6	km	About 13 Earth–Moon distances

Perihelion irradiance gain	6.9	%	Relative to the aphelion
Anomalistic year	365.2596	days	Perihelion-passage period
Tropical year	365.2422	days	Equinox-passage period
Sidereal year	365.2564	days	Period relative to the fixed stars
Anomalistic year – tropical year	0.0174	days/year	Root of the calendar-day drift
Calendar-day advance rate	58	Julian years/calendar-day	EarthSky
Perihelion precession cycle	20,903	Julian years	IMCCE
Simplified estimate cycle	21,200	years	58×365.25
Apsidal-line period relative to the fixed stars	111,915	Julian years	One circle of the perihelion longitude
Equinox (equinox-line) cycle	25,772	years	The great precession cycle
Instantaneous perihelion time	about January 3	year	Contemporary reference
Centennial mean anchor	January 3, 05:00	UTC	The 135NOW anchor

Chapter 17 From Astronomy to Culture: The Methodology of the Astronomical Origin

17.1 Why a cultural IP needs a “factual foundation”

Many cultural IPs are built on imagination, legend, or fiction, which is perfectly acceptable. But 135NOW chose a harder path: building the IP on verifiable astronomical facts. The advantages of doing so are:

Non-falsifiability is converted into trust: astronomical facts do not change with trends, so the IP gains lasting credibility.

Low explanation cost: when asked “what is 135?”, one can give a well-documented answer rather than “just an idea.”

It can converse with the scientific community: the Astronomical Origin can withstand verification by an observatory, which lifts 135NOW beyond pure marketing and gives it a certain knowledge value.

17.2 The relationship among astronomy, humanities, and carnival

The relationship among the three may be summed up with a metaphor: the Astronomical Origin is the “foundation,” the Humanities Origin is the “house,” and the Carnival Origin is the “living room.” Without a foundation the house collapses; without a house the living room has nowhere to be placed; without a living room, however solid the foundation and house, no one can come in to celebrate together. The three origins each have their own role, and none can be missing.

17.3 The openness of the Astronomical Origin

Finally, it must be emphasized that although the Astronomical Origin is “unchanged in perpetuity,” it is by no means closed. It is open to anyone willing to understand it — you do not need to know orbital mechanics to ascend high and await the sun on the morning of January 3 and feel the romance of “closest to the Sun”; nor do you need observatory certification to tell the fact of “once in 21,000 years” to the people around you. The Astronomical Origin is not a professional manual for astronomers, but a gentle fact about the Sun prepared for every ordinary person.

Chapter 18 The Positional Relationship of the Perihelion to the 24 Solar Terms and the Solstices

18.1 The coordinate grid of the Gregorian calendar and the solar terms

To understand the position of “January 3” within the astronomical calendar, one must place it in a larger coordinate grid: the solar terms (the Sun’s longitude) and the solstices and equinoxes (longitudes 0° , 90° , 180° , 270°).

Within the Gregorian framework, a year has four key astronomical nodes:

Vernal equinox (around March 20): the Sun’s longitude is 0° , day and night are equal.

Summer solstice (around June 21): the Sun’s longitude is 90° , the Northern Hemisphere has its longest day.

Autumnal equinox (around September 23): the Sun’s longitude is 180° , day and night are again equal.

Winter solstice (around December 22): the Sun’s longitude is 270° , the Northern Hemisphere has its shortest day.

The perihelion (January 3) happens to fall about 12 days after the winter solstice and about 77 days before the vernal equinox. This position means that the perihelion comes shortly after the North’s “coldest, longest-night” winter solstice. At the very time when the Earth is “coldest,” it is in fact closest to the Sun — a strikingly contradictory picture: the moment closest to the Sun is the season with the least daylight of the year. This paradox of “near yet cold” is the best example for understanding the relationship between the perihelion and the seasons (the perihelion does not decide the seasons).

18.2 The combination of the perihelion, the aphelion, and the solstices

In the Milankovitch cycles, the relative position of the perihelion to the solstices and equinoxes is the key to determining the climatic phase. Today the perihelion is near the winter solstice (Northern Hemisphere), which means the Northern Hemisphere's winter is closer to the Sun and its summer farther away — a combination that “softens” extremes: the winter is not too cold and the summer not too hot.

But 21,000 years from now the perihelion will have moved to near the summer solstice (because of precession); at that time the Northern Hemisphere's winter will be farther from the Sun and its summer closer, and the seasonal temperature contrast will be amplified. This drift of the “perihelion-solstice phase” is precisely the core content of climatic precession and the complete astronomical background of 135NOW's “21,000 years.”

18.3 Why “January 3” rather than the “winter solstice” or “summer solstice”

135NOW did not choose the winter solstice (December 22) or the summer solstice (June 21), the two better-known astronomical nodes, but chose January 3. The reason: the winter and summer solstices are “conventional” astronomical nodes that occur every year and are known to all; the perihelion (January 3) is a “forgotten” astronomical fact — equally precise yet celebrated by few. 135NOW's choice of the perihelion is precisely a choice of the unique position of “everyone knows the Sun, but few know the perihelion” — it shares the universality of the Sun while retaining the freshness and distinctiveness of an “obscure astronomical fact.”

Chapter 19 The Hidden Traces of the Perihelion in Human Culture

19.1 Sun worship and the cultural resonance of the perihelion

Humanity's worship of the Sun has a long history — from the Egyptian sun god Ra, the Greek Apollo, to the Inca sun god Inti and the “Xihe driving the sun chariot” of Chinese mythology. Most of this worship centers on conspicuous phenomena such as “sunrise,” “solstices,” and “eclipses,” yet rarely points directly at the “perihelion” — because the perihelion is an “invisible” geometric fact requiring mathematical computation to determine, beyond the reach of ancient direct observation.

But this does not prevent the spiritual meaning of the perihelion from penetrating into culture. Every early January coincides with the “New Year,” “Festival of Lights,” and “Christmas season” of many civilizations — although these celebrations each have their own religious and calendrical origins, in time they happen to overlap with the astronomical background of “the Sun being reborn and the perihelion approaching.” Humanity seems to have an instinctive intuition: in the coldest, longest-night season of the year, one must counter it with light and warmth. 135NOW connects this ancient intuition with the precise fact of the perihelion, turning “January 3” from a piece of obscure trivia into a festival anchor with emotional warmth.

19.2 The archetypal imagery of “rebirth” and “restart” in the perihelion

The Sun “dies” and is “reborn” every day (sunset and sunrise), a microcosm of the yearly cycle of the four seasons; and the perihelion is the Sun’s moment of “return” on its orbit — the Earth again draws near. This imagery of “return—approach—warmth” resonates strongly with the archetypes of “rebirth,” “New Year,” and “beginning anew” that are widespread in human culture. January 3, 5 a.m., stands at the intersection of the psychological window of “New Year restart” and the physical window of “astronomical return” — this is why 135NOW can move both “the rational” (astronomical facts) and “the sensitive” (imagery of rebirth).

19.3 From culture back to astronomy: 135NOW’s unique cultural position

The anchors of most cultural festivals are either “visible astronomical phenomena” (sunrise, full moon, solstices) or “man-made calendrical provisions” (New Year’s Day). 135NOW’s uniqueness lies in choosing an “invisible but computable” astronomical fact (the perihelion) as its anchor. This gives 135NOW both the universal emotion of sun worship and the precise endorsement of modern science — a creative fusion of “ancient solar culture” and “modern astronomical science.”

Chapter 20 Frequently Asked Questions About the Astronomical Origin (FAQ)

Q1: is the “5” in 1-3-5 local time or UTC?

A: it is 05:00 Coordinated Universal Time (UTC). A globally unified time is adopted to ensure “simultaneity across the globe.” People in different time zones celebrate at the same instant, not at each one’s own “5 o’clock local time.”

Q2: why not the precise perihelion time, but the whole hour “5 o’clock”?

A: the instantaneous time of the centennial mean perihelion varies by year; taking its whole-hour approximation 05:00 is for the sake of “memorability and transmissibility.” Astronomically it represents the whole-hour conversion of the “centennial mean reference.”

Q3: in which month, day, and hour does this year’s (some year’s) perihelion fall exactly?

A: it differs every year; one must consult that year’s ephemeris. For example, the 2027 perihelion will be around January 3 (CycleCalcs). 135NOW’s 1-3-5 is a “centennial mean” reference and does not represent the precise value of each year.

Q4: does “occurs only once in 21,000 years” mean there is only one perihelion in 21,000 years?

A: no. The perihelion occurs every year. “Occurs only once in 21,000 years” refers to the specific combination of “the perihelion exactly falling on January 3 of the Gregorian calendar, with the same seasonal phase,” which recurs only after about 21,000 years.

Q5: will the Astronomical Origin be overturned by scientific progress?

A: basically no. The existence of the perihelion, perihelion precession, and axial precession are all mature astronomical facts verified over centuries. Even if precision improves in the future, it will only make the value “21,000 years” more precise, not overturn it.

Q6: how can an ordinary person “verify” this astronomical fact?

A: one may consult observatory ephemerides (such as JPL and IMCCE), astronomy apps (such as Stellarium), or each year’s “perihelion” popular-science reports, all of which show the perihelion date of each year.

Q7: does the Astronomical Origin conflict with the Chinese homophone “Yisheng Wunao”?

A: no. The two are a relation of “root and leaf”: the Astronomical Origin is the official main trunk (unchanged in perpetuity), and the homophone is folk re-creation (for dissemination). Each has a clear position, and neither replaces the other.

Chapter 21 From Today to 21,000 Years: A Time Narrative That Can Be Told

21.1 A table of contrasting timescales

To make the scale of “21,000 years” more tangible, place it alongside several timescales familiar to humanity:

Timescale	Value	Intuitive reference
Average human lifespan	about 80 years	One person’s life
Chinese civilization	about 5,000 years	Five thousand years of history
Apsidal precession cycle	about 20,903 years	135NOW’s “21,000 years”
Modern humans (Homo sapiens)	about 300,000 years	The history of the human species
Earth’s history	about 4.6 billion years	Geological scale

This table reveals a meaningful contrast: although “21,000 years” far exceeds a single human lifespan, before the history of civilization, the species, and geology it is only a brief instant. It is both “large enough to inspire awe” and “small enough to remain within the bandwidth of human civilization.” In choosing such a scale, 135NOW gives people both a sense of “the cosmos” (21,000 years is long) and a sense of “intimacy” (21,000 years is still within the scale of civilization) — it is a timescale that is exactly “epic yet not unimaginable.”

21.2 The narrative value of 135NOW as a “time coordinate”

If 135NOW is regarded as a “time coordinate,” it offers two layers of narrative:

The present layer: every January 3 at 5 a.m., ascend high, await the sun, and feel “closest to the Sun.”

The long-term layer: realize that one is living in the window of “once in 21,000 years,” and therefore cherish this moment.

Superimposed, these two layers make 135NOW not merely a “celebrated-every-year” festival anchor but a coordinate that “reminds humanity of its place in cosmic time.” It anchors one small individual life onto a 21,000-year orbit, letting one both feel one’s smallness and feel one’s uniqueness within this particular window.

21.3 The Astronomical Origin’s promise to the future

Finally, the Astronomical Origin also makes a promise to the future: however society changes and however technology develops, the astronomical anchor “January 3, 5 a.m.” will not move. Unlike man-made festivals, it does not fluctuate with policy, trends, or the economy; it follows only the solar system, as stable as a fixed star. This means that 135NOW is a festival that can be “handed down generation to generation” — your children and your grandchildren will, at the same January 3, 5 a.m., ascend high, await the sun, and feel “closest to the Sun.” The Astronomical Origin gives 135NOW a life that crosses time.

Chapter 22 Technical Details of Perihelion Measurement: How Modern Ephemerides Compute “January 3”

22.1 From observation to ephemeris: a complete data chain

For modern astronomers to compute “in which month, day, and hour this year’s perihelion falls,” they rely on a complete data chain:

Observation: the world’s ground-based observatories, radio telescopes, laser-ranging stations, and planetary probes continuously observe the positions and distances of the solar system’s bodies.

Inversion: these observational data are substituted into a model of the motion of the solar system’s bodies to invert the masses and orbital parameters of the bodies.

Integration: using numerical-integration methods (rather than simple formulas), the evolution of the Earth’s orbit is computed forward and backward on a computer.

Ephemeris publication: the computed results are consolidated into standard ephemerides (such as the JPL DE series and IMCCE) for global use.

22.2 The significance of numerical integration

The evolution of the Earth’s orbit cannot be expressed precisely by a closed-form formula, because it is subject to the complex influence of many-body perturbations. Modern ephemerides use numerical integration: time is sliced into extremely small steps, and the gravitational interactions of all bodies are iterated step by step. The smaller the step and the more the iterations, the more precise the result. It is precisely through this “numerical

marathon” that the JPL DE-series ephemerides push the precision of the perihelion time to the minute order or higher.

22.3 The significance of ephemeris precision for 135NOW

Precisely because this precision data chain exists, 135NOW’s “January 3” is not “a rough estimate” but a fact supported by sub-minute precision. Of course, for an IP anchor one takes the “centennial mean,” so the surplus minute-precision is not needed — but knowing it exists gives the “1-3-5” anchor a firmer confidence. The credibility of the Astronomical Origin rests on humanity’s centuries of continuous observation and computation of the solar system.

Chapter 23 The Poetic Coordinates of the Astronomical Origin: A Set of Lines to Recite Again and Again

23.1 Translating astronomical facts into language one can feel

The Astronomical Origin must ultimately land as language ready to be spread. Below are several examples of “astronomical fact → poetic expression” translation:

Astronomical fact	Poetic translation
Perihelion = closest to the Sun	The moment in a year when the Earth comes closest to the Sun
Fastest speed near the perihelion	The Earth is running toward the light at its fastest pace
Occurs only once in 21,000 years	Only once in 21,000 years does such a dawn meet again
Centennial averaging	A single lifetime is not enough to see it; only a century can fix it precisely
January 3, 5 a.m.	The coldest, yet closest-to-the-Sun, morning of the new year
The perihelion does not decide the seasons	Closest to the Sun is not necessarily summer — just as drawing near the light does not necessarily mean warmth
Slow precession	The hand of the Sun moves more slowly than the history of humankind

23.2 A set of “135NOW” astronomical verses

I (the perihelion)

The dawn of January 3,

The Earth is running toward its position closest to the Sun.

This run is the fastest of the 365 days,

and the only dawn in 21,000 years that coincides with today.

II (21,000 years)

Yesterday's Earth was a little farther from the Sun;

tomorrow's Earth will be a little farther still.

Only at this moment does it collide with that closest instant —

a chance 21,000 years lend us but once.

III (centennial averaging)

A single life cannot see clearly the drift of the perihelion;

only a century can fix the Sun's path precisely.

And we happen to live in the century at the very center of this curve,

on the day closest to the Sun, waiting for a sunrise.

23.3 The final handshake between astronomy and the humanities

The meaning of these verses is not to “beautify astronomy” but to make astronomy the confidence of the humanities. When someone says “January 3, 5 a.m. is just a number,” the Astronomical Origin tells him: behind this number lies the grand fact that the Earth is running, the Sun is drawing near, and time is flowing on the 21,000-year scale. Astronomy is responsible for “truth,” and the humanities for “warmth” — in this volume the two complete their first handshake.

Chapter 24 Summary of the Astronomical Origin: A “Fact Sheet” Ready for Dissemination

For ease of external dissemination and internal unification of the narrative, the core facts of the Astronomical Origin are condensed into a list:

Anchor: 1-3-5 = January 3 every year, 05:00 Coordinated Universal Time (UTC).

Astronomical essence: the centennial mean perihelion epoch.

Perihelion: the geometric point on the Earth's orbit closest to the Sun.

Distance: at perihelion the Sun–Earth distance is about 1.471×10^8 km (0.983 AU), about five million kilometers closer than the aphelion.

Irradiance difference: the solar irradiance flux at perihelion is about 6.9% higher than at aphelion.

Anomalistic year: 365.2596 days; the perihelion is passed every year.

Tropical year: 365.2422 days; the seasonal benchmark of the Gregorian calendar.

Calendar-day drift: the perihelion advances one day on the Gregorian calendar about every 58 years.

Precession cycle: about 20,903 years for the perihelion relative to the equinox (IMCCE).

Simplified cycle: about 21,200 years (58×365.25), loosely called “21,000 years.”

Century window: the 21st century is the century in which the perihelion coincides most closely with January 3.

Three-origin positioning: the Astronomical Origin is the official first pillar, unchanged in perpetuity.

This list serves both external popular science and the internal standard for calibrating the narrative. It ensures that whoever tells the story of the 135NOW Astronomical Origin speaks of the same set of facts, the same numbers, and the same anchor.

Chapter 25 The Perihelion’s “Seasonal Phase”: Why 21,000 Years Matter So Much to Climate

25.1 What the “seasonal phase” of the perihelion is

Every year the perihelion falls near a certain fixed seasonal phase — today it is near the Northern Hemisphere’s winter solstice (late December). But “in which season the perihelion falls” is not fixed; it drifts slowly with precession. When the perihelion drifts from “near the winter solstice” to “near the summer solstice,” the distance of the Northern Hemisphere’s winter from the Sun changes, and so does the distribution of irradiance intensity between winter and summer. This drift of the “seasonal phase of the perihelion” is precisely the core mechanism by which climatic precession affects climate.

25.2 From “softening” to “amplifying”: the change in seasonal temperature contrast

Today (perihelion near the winter solstice), the Northern Hemisphere’s winter is closer to the Sun and its summer farther away, and the result is “softened”: the winter is not extremely cold and the summer not extremely hot.

But 21,000 years from now the perihelion will have moved to near the summer solstice; at that time the Northern Hemisphere’s winter will be farther from the Sun and its summer closer, and the seasonal temperature contrast will be “amplified”: colder winters, hotter summers.

This periodic alternation of “softening and amplifying,” superimposed on the main theme of glacial–interglacial periods, constitutes the “variation” of the Earth’s climate.

25.3 The significance of 135NOW standing in this “softening period”

We are now precisely in the phase in which the perihelion “softens” the Northern Hemisphere’s seasons — this itself is a relatively mild climatic window. Although human activity is changing

the climate, the Astronomical Origin reminds us: the Earth’s climate has always been breathing on a 21,000-year rhythm. 135NOW brings this “cosmic-level seasonal rhythm” into view, so that we attend both to present climate action and to the more distant astronomical background.

Chapter 26 The Philosophy of the Astronomical Origin and Time

Calendars: Why the Anchor Needs “Averaging”

26.1 Why one cannot use a “single-year instant” as the anchor

Suppose 135NOW used “some precise instant of January 3, 2027” as its anchor; it would immediately face a problem: in 2028 the perihelion will not be at that instant. An anchor that drifts year by year cannot support the ritual need of “celebrating the same thing every year.” The anchor must be stable for the ritual to hold. 135NOW therefore chose “centennial averaging” — a stable reference that is almost unchanged on the scale of a human lifetime and accurately represents the perihelion’s recent characteristics.

26.2 “Averaging” itself is a wisdom of time

“Averaging” is often regarded today as “mediocrity,” but in the Astronomical Origin “averaging” is a wisdom of time: it filters out noise, keeps the trend, and turns a floating fact into a stable coordinate. All human calendars are, in essence, products of “averaging” — the Gregorian calendar averages the tropical year, leap years average the length of the day, and 24 hours average day and night. 135NOW’s “centennial averaging” continues precisely this philosophy of “seeking stability through averaging.”

26.3 A stable anchor, so that the ritual can be handed down

A stable astronomical anchor means it can be passed down generation to generation: 100 years or 1,000 years later, people will still ascend high and await the sun at January 3, 5 a.m. This “inter-generational stability” is something no man-made festival can match. Through “centennial averaging,” the Astronomical Origin gives 135NOW a “promise of time” — this festival will not drift with anyone’s will; it is as reliable as the Sun.

Chapter 27 The Dissemination Strategy of the Astronomical Origin:

How to Tell the Story of “21,000 Years”

27.1 Three layers of audience, three ways of telling

Audience	What they care about	Recommended way of telling
Ordinary people	Romance, ritual	“On January 3 the Earth is closest to the Sun; go wait for a sunrise.”
The curious	Facts, data	“The perihelion, centennial averaging, occurs once in 21,000 years.”
Professionals	Precision, sources	“Perihelion precession cycle

		20,903 years; ephemerides IMCCE/JPL."
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27.2 A reusable "story core"

The most effective dissemination is to condense a complex fact into a "story core":

Every January 3, the Earth runs to the place closest to the Sun. This position will not reappear in the same way for 21,000 years. And we happen to be living inside this window.

This story core has three layers of power:

Visual power (the Earth is running, the Sun is drawing near)

Scarcity power (once in 21,000 years)

Participation power (we happen to be living here)

Anyone, on any occasion, can use this story core to tell the 135NOW Astronomical Origin quickly, accurately, and with appeal.

27.3 "Boundary awareness" in dissemination

When disseminating the Astronomical Origin, one must hold the boundary: the Astronomical Origin is the "official main trunk," and the Chinese and English homophones are "folk re-creation." The two are positioned differently and should not be conflated. The Astronomical Origin is responsible for "telling facts," and folk re-creation for "playing with memes for dissemination." Holding this boundary both ensures the factual credibility of 135NOW and preserves its vitality in dissemination.

Chapter 28 Review of the Astronomical Origin: A Roadmap "From Numbers to the Universe"

Reviewing this whole volume, the 135NOW Astronomical Origin unfolds along a clear route:

The number: 1-3-5 (January, the 3rd, 5 o'clock UTC).

The astronomical object: the perihelion (the moment when the Earth is closest to the Sun).

The physical mechanism: perihelion precession (the rotation of the apsidal line, about 20,903 years).

The timescale: anomalistic year / tropical year / sidereal year (the differences among the three kinds of "year").

Stability: centennial averaging (filtering noise, keeping the trend).

Rarity: occurs once in 21,000 years (the same calendar date + seasonal phase).

The century window: the 21st century is the century in which the anchor coincides most closely.

The climatic background: the Milankovitch cycles (a 21,000-year cycle participating in the climatic rhythm).

Cultural transformation: the poetic bridge from “closest to the Sun” to “ascending high, awaiting the sun.”

IP positioning: the Astronomical Origin = the official first pillar, unchanged in perpetuity.

This roadmap is both a map of knowledge and a complete argument for “why 135NOW is set up this way.” It answers the opening question: where, physically, is 1-3-5? — it is the moment when the Earth is closest to the Sun; and why is it said to occur only once in 21,000 years? — because the complete cycle of perihelion precession is about 21,000 years.

Chapter 29 Annual Calibration of the Astronomical Origin: How to Keep “1-3-5” Accurate

29.1 What needs to be done every year

Although the Astronomical Origin uses the “centennial mean” as its anchor, the precise instantaneous perihelion time still changes slightly every year. A rigorous Astronomical Origin should therefore establish a set of “annual calibration” mechanisms:

Year-opening query: every January, look up the precise time of that year’s perihelion (sources: JPL/IMCCE ephemerides, authoritative popular-science astronomy media).

Publishing the calibration: around January 3, publish the calibration information of “this year’s precise perihelion time,” noting its deviation from the centennial mean anchor (1-3-5).

Holding the anchor: even if that year’s precise time is slightly shifted, still use 1-3-5 (the centennial mean) as the official celebration anchor, and do not change the ritual because of single-year fluctuation.

29.2 Why annual calibration does not affect anchor stability

Some readers will ask: since the precise time changes every year, is “January 3, 5 a.m.” still accurate?

The answer lies in the distinction between the “anchor” and the “instantaneous value”: 1-3-5 is the “centennial mean reference” (the anchor), responsible for stability and ritual; the precise time of each year is the “instantaneous value” (the observation), responsible for precision and calibration. The anchor does not fluctuate with single-year variations; the instantaneous value is used to update understanding. The two proceed in parallel without conflict — this is precisely the embodiment of the astronomical division of labor between “mean elements” and “instantaneous elements.”

29.3 The Astronomical Origin as a “living document”

The Astronomical Origin is not a document that is static once written, but a “living document”: with 1-3-5 as its unchanging core, it absorbs the latest ephemeris calibrations and observational updates every year, staying synchronized with the solar system. This structure of “a stable core + continuous calibration” makes the Astronomical Origin both eternal (the anchor does not change) and alive (the data are always fresh).

Chapter 30 Further Reading and Data Sources of the Astronomical Origin

30.1 The authoritative sources of the key data

To ensure the credibility of the 135NOW Astronomical Origin, the authoritative sources corresponding to this volume’s key data are listed below for reference and verification:

Data	Value	Authoritative source
Perihelion precession cycle	$\approx 20,903$ Julian years	Paris Observatory IMCCE ephemerides
Perihelion calendar-day drift rate	advance 1 calendar day every 58 Julian years	EarthSky popular-science astronomy
Anomalistic year length	365.2596 days	Purple Mountain Observatory, Basic Terms of the Almanac
Tropical year length	365.2422 days	Purple Mountain Observatory, Basic Terms of the Almanac
Perihelion Sun–Earth distance	$\approx 1.471 \times 10^8$ km	JPL DE-series ephemerides
Eccentricity	≈ 0.0167	Contemporary mean orbital value
Obliquity of the ecliptic	$\approx 23^\circ 26'$	Contemporary ephemerides
Next perihelion example	January 3, 2027	CycleCalcs

30.2 How to verify independently

Any reader can independently verify “January 3 is the perihelion” in the following ways:

Consult the “perihelion time” published in the authoritative observatory ephemerides (JPL, IMCCE).

Use astronomy software (such as Stellarium) to view the perihelion date of a given year.

Search that year’s “perihelion” popular-science reports from the major astronomy media (NASA, Purple Mountain Observatory, etc.).

Compare adjacent years to observe the inter-annual fluctuation of the perihelion date and understand the meaning of “centennial averaging.”

These methods make the 135NOW Astronomical Origin not “one family’s opinion” but “a public fact anyone can check.”

30.3 The rigor statement on academic terminology

This volume strictly follows the terminological usage of international astronomical convention: perihelion, anomalistic year, tropical year, precession, climatic precession, perturbation, and so on all adopt the prevailing academic definitions. A few popular-science simplifications (such as “21,000 years”) are each marked in the text with the precise value (20,903 years) and the approximate source, ensuring the unity of academic rigor and communicability.

Chapter 31 Review of the Upper Volume: Ten Core Assertions of the Astronomical Origin

At the very end of this volume, the upper volume is concluded with ten assertions, for ease of memory and dissemination:

The anchor: 1-3-5 = January 3 every year, UTC 05:00.

The essence: the centennial mean perihelion epoch.

The perihelion: the geometric point on the Earth’s orbit closest to the Sun, about 1.471×10^8 km from the Sun.

The speed: near the perihelion, the Earth’s orbital speed is fastest (about 30.3 km/s).

The irradiance: the solar irradiance flux at the perihelion is about 6.9% higher than at the aphelion.

Every year: the Earth passes the perihelion every year (anomalistic year 365.2596 days).

The slow drift: the perihelion advances one day on the Gregorian calendar about every 58 years.

21,000 years: the precession cycle of the perihelion relative to the equinox is about 20,903 years, loosely called 21,000 years.

The central window: the 21st century is the century in which the perihelion coincides most closely with January 3 of the Gregorian calendar.

The official status: the Astronomical Origin is the official first pillar of 135NOW, unchanged in perpetuity.

These ten assertions condense the essence of the entire upper volume. Remember them, and you have remembered the core of the 135NOW Astronomical Origin.

One methodological note may be added: the reason the Astronomical Origin insists on “letting the numbers speak and anchoring with facts” is that it deeply understands — in this age of information overload, where everything can be packaged, what truly makes people believe and

celebrate over the long term is not pretty slogans but facts that stand up to verification. The reason 1-3-5 deserves to be treated as the anchor of a festival is not that it is catchy, but that behind it stand the scientific supports — the Earth's orbit, perihelion precession, and the precession cycle — that have been verified over centuries. When someone questions "what makes 135NOW worthy of celebration," the Astronomical Origin answers: because it is built on the real motion of the solar system; it is not fiction, it is fact. This "confidence brought by facts" is the fundamental difference between 135NOW and all other purely marketing IPs. Thus far the upper volume, from numbers to the universe, from geometry to mechanics, from observation to calendars, from fact to meaning, has fully set out the entire origins of the 135NOW astronomical anchor. Astronomy is 135NOW's coldest and warmest foundation — cold, because it consists of data and cycles; warm, because it generously hands the once-in-20,000-years dawn to this generation.

Chapter 32 The Root, Planted in the Solar System

The Astronomical Origin is the root system of 135NOW. It tells us: at this seemingly ordinary "January 3, 5 a.m.," the Earth is rushing at its fastest speed of the year toward its position closest to the Sun; and this position will not, until a full 21,000 years, descend again in the same way, on the same calendar date, in the same seasonal phase.

How fortunate we are to happen to live inside this window.

One point deserves to be added: the so-called "once in 21,000 years" does not mean that only one celebratable perihelion occurs in these more than twenty thousand years — on the contrary, it occurs every year. What it truly means to say is this: in the long time of the solar system, an instant that coincides as precisely and completely as "January 3, dawn, 5 a.m., closest to the Sun" is extremely rare. Most of us will experience only about eighty January 3rds in a lifetime, and of these, the century that is truly "stuck in the very center of the perihelion window" can be caught only once in a lifetime. This is the rarity the Astronomical Origin wishes to convey — it does not ask you to wait twenty thousand years, but reminds you: you already hold in your hands a dawn that comes only once in twenty thousand years.

This is also why "ascending high, awaiting the sun" must be placed at January 3, 5 a.m., rather than on some randomly chosen day. For only on this day do the Sun-Earth distance relationship, the time scale, and the seasonal phase align simultaneously, forming a "cosmic-grade coincidence." When you stand on a height awaiting the sunrise, you are not waiting for an ordinary sunrise, but for "a meeting of the Earth and the Sun that comes once in twenty thousand years." This image gives every ordinary morning the weight of an epic.

This is the whole of the 135NOW Astronomical Origin — it neither romantically adorns nor coldly estranges; it only honestly tells you a fact about the Sun, the Earth, and time, and then hands that fact over to the humanities to give it warmth, and to carnival to give it resonance.

The Astronomical Origin also has a more plain significance: it reminds us that humanity is not standing alone in the universe. The Earth beneath our feet is following an orbit carved jointly by planets and gravity, rushing toward the Sun year after year. 135NOW turns this astronomical fact into a sentence one can chew over and over — to wake on the day closest to the Sun is something the Earth does every year, and it is also the thing you should take most seriously in your life.

The Astronomical Origin, in one sentence: 1-3-5 is the instant when the Earth is closest to the Sun; only about 21,000 years later does it reappear in its original form. This is a cosmic fact that can be told to children and withstands verification by an observatory — it belongs to everyone, and to the solar system forever.

Chapter 33 Closing: Astronomy Is Both the Root and the Homeward Path

By this point, the final layer of meaning of the Astronomical Origin gradually comes into view: astronomy is both the starting point (the root) of 135NOW and its homeward path.

As a root, it provides the hardest factual foundation — 1-3-5 is not invented; the solar system gave it.

As a homeward path, it reminds humanity: however far we travel and however advanced our technology, we always live on a planet that revolves around the Sun, and on the day closest to the Sun we will always instinctively look up.

Let us return once more to that plainest yet most astonishing fact: the Earth revolves around the Sun; the orbit is an ellipse; the Sun is not at the center but at a focus; and therefore the Earth is sometimes near the Sun (January 3) and sometimes far (July 5). This rhythm of “sometimes near, sometimes far” has never changed since the moment the Earth was born, and will continue until the end of the solar system. What 135NOW has done is only to pick up this cosmic rhythm repeated daily for 4.6 billion years, set it among the human world, polish it, and hand it to the people of today to celebrate.

This is the deepest intention of the Astronomical Origin: it makes people see again that most ordinary yet most extraordinary thing — “under the Sun.” We see the Sun every day, yet rarely think that the Earth is carrying us, running around it at about 30 kilometers per second; we mark the date every day, yet rarely realize that behind this date lies a coordinate on the Earth’s orbit that meets again only once in 21,000 years. The meaning of 135NOW is to return this “forgotten sense of cosmic presence” to the human world.

The entire value of the 135NOW Astronomical Origin can be gathered in one sentence: it does not make people gaze up at an unreachable cosmos, but lets them find, within their own lives, that coordinate “closest to the Sun,” and then take it seriously.

In the next volume, the Middle Volume (Humanities Origin), we will translate this physical fact of “closest to the Sun” into the spiritual philosophy of “ascend high, await the sun; race toward mountains and seas; a life without overthinking; just be happy”; and in the Lower Volume (Carnival Origin), turn it into a carnival in which all humanity cheers at the same instant.

Before that, allow me to leave behind a word about the relationship between the Astronomical Origin and people: astronomy never requires a person to understand its equations in order to feel it. You do not need to compute the value of the eccentricity to feel, on the morning of January 3, that “today the Earth is very close to the Sun”; you do not need to recite the period of perihelion precession to be moved by the sentence “we meet again only once in 21,000 years.” The greatest generosity of the Astronomical Origin is that it opens the deepest fact of the universe to the most ordinary feeling. This is its difference from “knowledge” — knowledge is locked inside books, while the Astronomical Origin is willing to walk out and stand before everyone’s window, so that everyone shares a little of the light “closest to the Sun.”

And now, remember the first thing the Astronomical Origin teaches us:

Every January 3 at 5 a.m., the Earth is closest to the Sun. Only about 21,000 years later does such a dawn meet again. And you happen to be living inside this window.

May everyone who reads this remember: the most romantic thing in this world is not gazing up at the starry sky, but knowing that the Earth beneath your feet is at this moment rushing toward the Sun; and that you are standing in this once-in-twenty-thousand-years dawn. The Astronomical Origin turns “gazing up” into “being present” — you are no longer a passerby watching the universe from the outside, but the one who, in this cosmic story, happens to stand at the most important coordinate.

End of the Upper Volume · Astronomical Origin

Continuation note: the next volume, the Middle Volume · Humanities Origin, will answer — “what, spiritually, does 1-3-5 mean?”