

TERRENA

Birth of a World



Terrena · procedural render seeded by real Tuna-17 job 1476038 (seed 2a9a2c6abfed...)

Seeded by a real Tuna-17 quantum job

Quantum Inspire · Tuna-17 superconducting processor · job 1476038 · 1,024 shots · finished
12:23:07 PM PT, Sep 26, 2026

Uncle Benny® Quantum Research Division · report generated Sep 26, 2026
The cover image is a procedural render from the seeded simulation; it is not a photograph.

1 · Plain-language summary

On September 26, 2026 we ran a real job on Tuna-17, the 17-qubit superconducting quantum processor in Quantum Inspire. The job put every qubit into superposition with a Hadamard gate and measured it 1,024 times. Every measurement gave a 17-bit string, and 1,017 of the 1,024 results were different from each other.

A quantum computer this size cannot simulate a universe. What it can do is produce genuinely unpredictable numbers, so the measured bitstrings became the random seed. We hashed them with SHA-256 into one 256-bit number, and that number drove an ordinary (classical) procedural simulation that picked every parameter below.

The seed produced a flat universe much like ours (age 13.91 billion years), a 2-arm spiral galaxy with about 127 billion stars, and a Sun-like star called Kestrel (F9V, 1.07 solar masses). Kestrel is orbited by Terrena, a world of 1.03 Earth masses with 1.01 g gravity, a 421-day year, a 26.6-hour day and 65% ocean. Its average surface temperature is about 18 °C.

In the fictional year 2617, Terrena is home to 12.9 billion people. They live in 115 arcology cities, with an orbital ring 794 km up, 3 space elevators and a 63-terawatt fusion grid. It is rendered in cyan with glittering glints.

What is real and what is not

Real (measured)	Computed (classical simulation)	Artistic / speculative
The Tuna-17 job, its 1,024 bitstrings, its timestamps and job IDs	Cosmology, galaxy, star, habitable zone and planet physics derived from the seed with textbook formulas	Colours (cyan + glitter), continent shapes, civilization, and the climate/life narrative

Nothing in this report claims that Terrena physically exists. It is a world generated from quantum randomness.

2 · The real quantum job

Field	Value
Platform / backend	Quantum Inspire · Tuna-17 (backend_type_id 7, hardware = True, 17 qubits)
Job ID / batch job ID	1476038 / 849438
Project / algorithm / file IDs	746435 / 1501961 / 1484988
Backend status at submit	calibrating (the job waited in the queue until calibration/benchmarking finished)
Submitted (created)	11:49:57 AM PT, Sep 26, 2026
Queued for execution	12:23:03 PM PT, Sep 26, 2026
Finished	12:23:07 PM PT, Sep 26, 2026
Execution time reported by QI	4.02 s
Shots requested / done	1,024 / 1,024
Unique bitstrings	1,017 of 1,024 (ideal uniform expectation ≈ 1020)
Result ID	1438873

Circuit (cQASM 3.0)

version 3.0 · qubit[17] q · bit[17] b · H q[0] ... H q[16] · b = measure q. This puts each qubit in an equal superposition and then measures it, so each shot is a 17-bit quantum random sample.

Bitstrings seen more than once

Bitstring	Count
00100010001110111	2
00110000111000111	2
10110111110101001	2
11000111001011110	2
11011110001101100	2
11100010010011001	2
11100111111001011	2

With $2^{17} = 131,072$ possible outcomes and 1,024 shots, a handful of repeats is expected by chance. We got 7 repeated strings, which matches an ideal uniform source (~ 4 expected, with ordinary scatter).

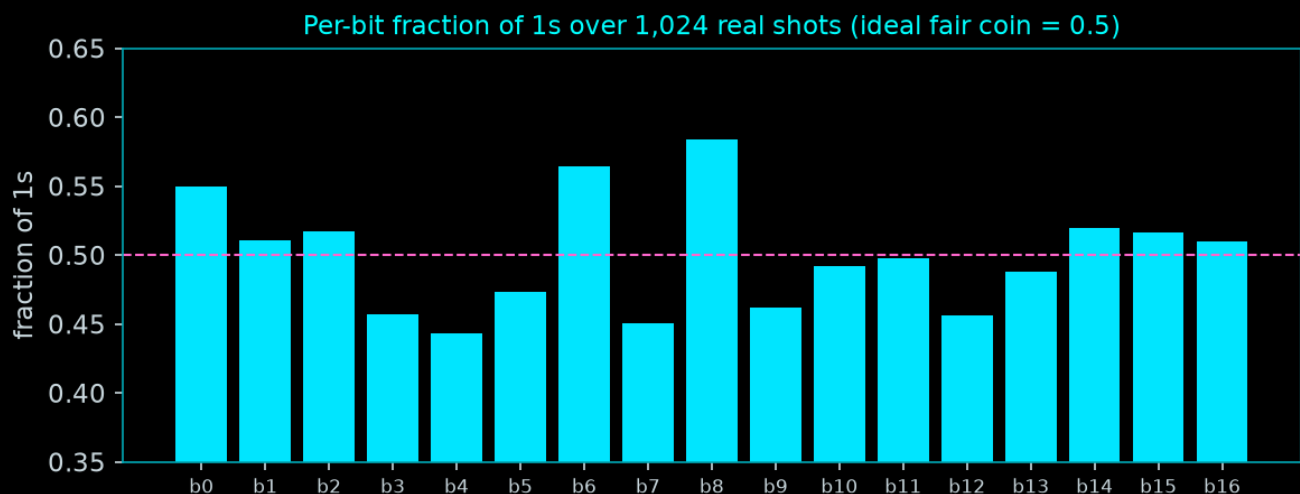


Figure 1. Per-bit fraction of 1s across the real shots. Deviations of a few percent are normal for current noisy hardware (readout bias) and for 1,024 samples. This does not matter for seeding, because the hash mixes every bit.

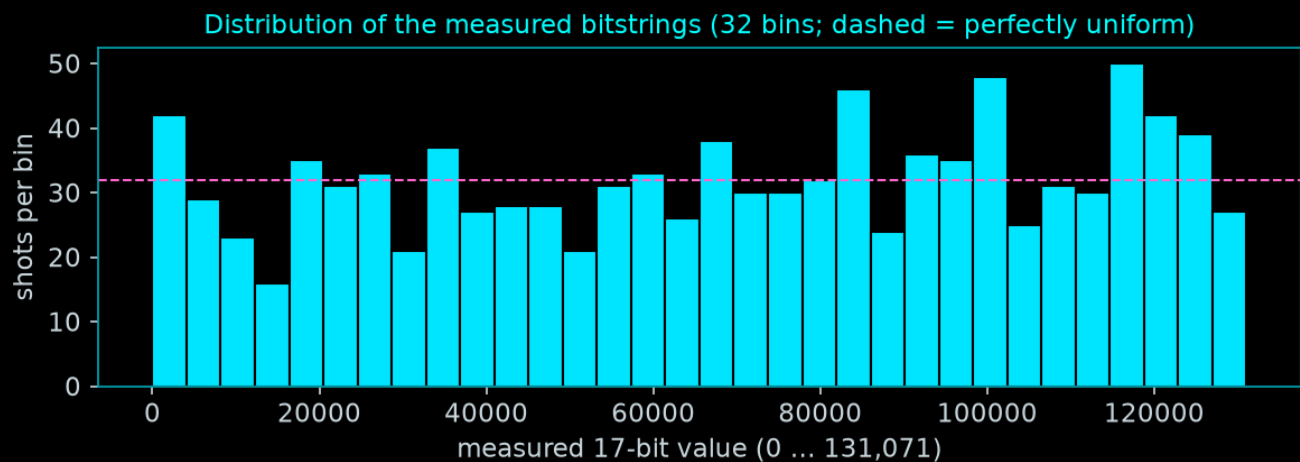


Figure 2. Histogram of the measured 17-bit values.

From bitstrings to seed

1. Sort all 1,017 (bitstring → count) pairs.
2. Serialize them as compact JSON together with the job ID.
3. Take the SHA-256 hash.
4. Use the 256-bit digest to initialize a NumPy PCG64 random generator, which draws every parameter in order. The same counts always give the same world, and changing even one shot gives a completely different world.

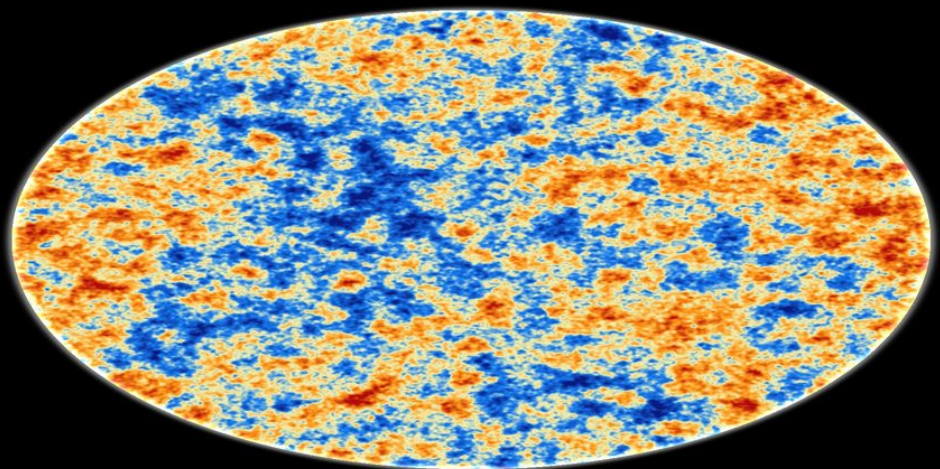
SHA-256 seed: `2a9a2c6abfedd8403feffc2da789587014071b5f4483fa78a220a466aec66e8e`

3 · The universe

A flat Λ CDM cosmology whose parameters were jittered slightly around our own universe's measured values. The age was then computed by integrating the Friedmann equation.

Parameter	Terrena's universe (seeded)	Our universe (reference, Planck 2018)
Hubble constant H_0	66.80 km/s/Mpc	67.4 km/s/Mpc
Matter density Ω_m	0.3161	0.315
of which baryons Ω_b	0.0466	0.049
Dark energy Ω_Λ	0.6839	0.685
CMB temperature today	2.7289 K	2.7255 K
Age of the universe	13.907 billion years	13.8 billion years
Recombination redshift	$z \approx 1088$	$z \approx 1090$
Recombination time (CMB released)	$\approx 376,401$ years	$\approx 380,000$ years

Because the jitter is small, Terrena's universe would look almost exactly like ours to an astronomer: the same kinds of galaxies, the same cosmic web, and a slightly lower expansion rate that makes it about 0.1 billion years older.



Cosmic microwave background from the seed · $T_{\text{today}} = 2.729$ K · recombination at $z \approx 1088$
2 · Hot plasma cools → cosmic microwave background · $\sim 376,401$ years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c6abfed...) · not a physical simulation of a real universe

Seeded CMB-like speckle map from the video (procedural Gaussian random field, not real CMB data).

4 · The galaxy

Property	Terrena's galaxy	Milky Way (reference)
Type	spiral, 2 major arms	barred spiral, 2 major + 2 minor arms
Number of stars	≈ 127 billion	≈ 100–400 billion
Disk diameter	≈ 103,000 light-years	≈ 100,000 light-years
Arm pitch angle	11.4°	≈ 12°
Home star distance from centre	23.5 thousand light-years	Sun: ≈ 26.7 thousand light-years



4 · A spiral galaxy forms · ~1 → 9.6 billion years

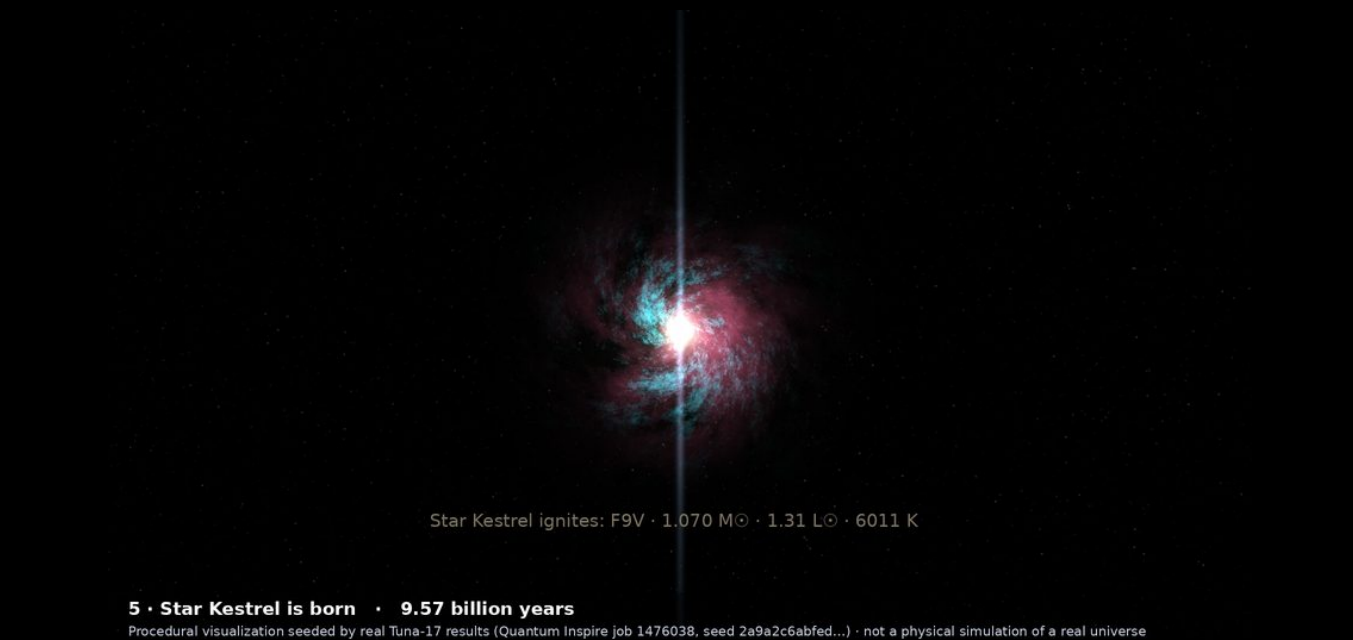
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c6abfed...) · not a physical simulation of a real universe

Frame from stage 4 of the video: particle model of the seeded 2-arm spiral, zooming toward Kestrel's birthplace.

Kestrel formed in the disk about 45% of the way from the core to the edge. This is the galactic habitable zone: far enough out to avoid the dense, radiation-heavy core, but close enough in that earlier stars had already enriched the gas with the heavy elements rocky planets need.

5 · The star Kestrel

Property	Kestrel (seeded)	Sun (reference)
Spectral type	F9V (F9/G0 boundary: Sun-like, a little hotter)	G2V
Mass	1.070 M $\odot$	1 M $\odot$
Luminosity ($L \propto M^4$)	1.311 L $\odot$	1 L $\odot$
Radius ($R \propto M^{0.8}$)	1.056 R $\odot$	1 R $\odot$
Surface temperature	6011 K	5,772 K
Age	4.34 billion years	4.6 billion years
Habitable zone (optimistic)	1.09 – 1.92 AU	0.95 – 1.68 AU (same formula)
Habitable zone (conservative)	1.14 – 1.57 AU	1.00 – 1.37 AU (same formula)

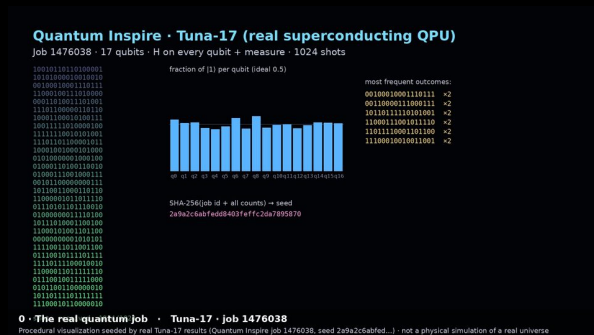


Stage 5 of the video: a collapsing nebula ignites Kestrel (procedural).

Kestrel is about 31% brighter than the Sun, so its habitable zone sits a little farther out. Terrena orbits at 1.13 AU, inside both the optimistic and conservative zones, and receives 1.04 times the sunlight Earth does. The habitable-zone limits are simple flux thresholds (Kopparapu-style), not a full climate model.

6 · Birth timeline

Each stage of the 86-second video, with the era it represents. Every stage is a procedural visualization driven by the seeded parameters.



0 · The real quantum job

Tuna-17 job 1476038

Real bitstrings stream in; the per-bit bars and SHA-256 seed are computed live from the actual counts.

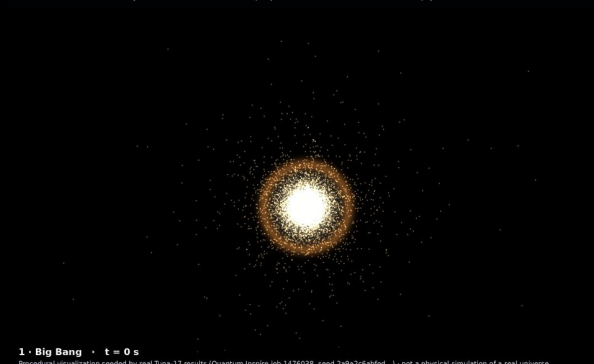
video time ≈ 6.8 s

1 · Big Bang

$t = 0$ s

A bright point expands. Particle directions come from the seed.

video time ≈ 13.3 s



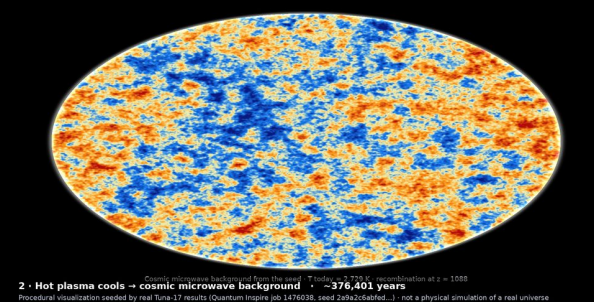
1 · Big Bang · $t = 0$ s
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5abfed...); not a physical simulation of a real universe

2 · Plasma cools → CMB

$\approx 376,401$ years

Hot plasma cools until light escapes at $z \approx 1088$, leaving a speckled CMB map (T today 2.729 K).

video time ≈ 21.8 s



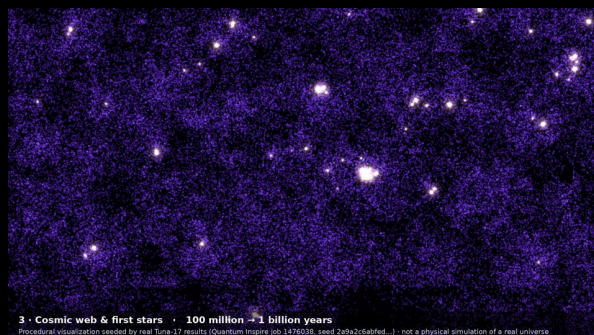
2 · Hot plasma cools → cosmic microwave background · $\approx 376,401$ years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5abfed...); not a physical simulation of a real universe

3 · Cosmic web & first stars

100 million → 1 billion years

Dark-matter filaments form under a Zel'dovich approximation of a seeded density field, and the first stars ignite in the densest knots.

video time ≈ 29.2 s



3 · Cosmic web & first stars · 100 million → 1 billion years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5abfed...); not a physical simulation of a real universe



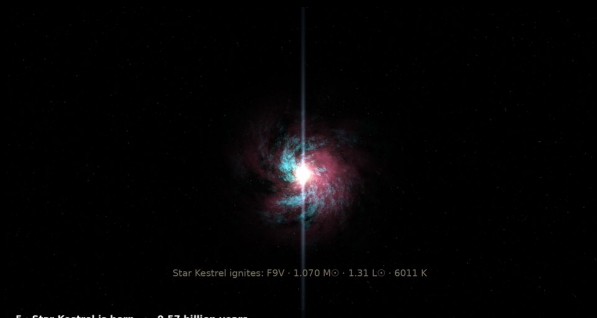
4 · A spiral galaxy forms · ~1 → 9.6 billion years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5a6fbed...1) · not a physical simulation of a real universe

4 · Galaxy forms

~1 → 9.6 billion years

A 2-arm spiral assembles and rotates; the camera zooms to 23.5 kly from the core.

video time ≈ 37.0 s



5 · Star Kestrel is born · 9.57 billion years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5a6fbed...1) · not a physical simulation of a real universe

5 · Kestrel is born

9.57 billion years

A molecular cloud spins up and collapses; the protostar ignites and launches bipolar jets.

video time ≈ 45.4 s



6 · Protoplanetary disk & planetesimals · 9.57 billion years (+ first ~10 Myr)
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5a6fbed...1) · not a physical simulation of a real universe

6 · Protoplanetary disk

9.57 Gyr (+ first ~10 Myr)

A Keplerian dust disk with gaps; planetesimals near 1.13 AU clump into proto-Terrena inside the habitable zone.

video time ≈ 52.7 s



7 · Terrena: molten → crust → oceans · 9.6 → 10.2 billion years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c5a6fbed...1) · not a physical simulation of a real universe

7 · Molten → crust → oceans

9.6 → 10.2 billion years

A magma ocean with impacts cools to a basalt crust, then oceans rise to 65% coverage.

video time ≈ 63.3 s



8 · Atmosphere, clouds, life · 10.6 → 13.91 billion years
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c0afed...) · not a physical simulation of a real universe

8 · Atmosphere, clouds, life

10.6 → 13.91 billion years

Clouds, a cyan atmospheric halo, and life colouring the land dark teal.

video time ≈ 72.1 s



9 · Civilization (year 2617) · 13.91 billion years (today)
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c0afed...) · not a physical simulation of a real universe

9 · Civilization

year 2617 (≈ 13.91 Gyr)

Cyan city lights on the night side, a neon orbital ring, elevators, stations, glitter, and the title card.

video time ≈ 76.9 s

7 · Terrena: physical data

Property	Terrena (seeded / derived)	Earth (reference)
Orbit (semi-major axis)	1.125 AU	1.000 AU
Insolation	1.035 × Earth	1.000
Eccentricity	0.0107	0.0167
Year (Kepler's 3rd law)	421.4 Earth days	365.25 days
Day length	26.65 h	24 h
Axial tilt	23.72°	23.44°
Mass	1.032 M _⊕	1 M _⊕
Radius ($R \propto M^{0.274}$)	1.009 R _⊕ (6426 km)	1 R _⊕ (6,371 km)
Surface gravity	9.95 m/s ² (1.014 g)	9.81 m/s ²
Mean density	5.54 g/cm ³	5.51 g/cm ³
Escape velocity	11.32 km/s	11.19 km/s
Ocean coverage	64.7%	71%
Surface pressure	1.028 bar	1.013 bar
Atmosphere	N ₂ 79.4% · O ₂ 19.7% · Ar 0.9% · CO ₂ 345 ppm	N ₂ 78.1% · O ₂ 20.9% · Ar 0.9% · CO ₂ ≈ 420 ppm
Bond albedo	0.291	0.30
Equilibrium temperature	257.9 K	≈ 255 K
Mean surface temperature	291.4 K (18.3 °C)	≈ 288 K (15 °C)
Moon	0.0123 M _⊕ at 332,609 km, 21.6-day orbit	0.0123 M _⊕ at 384,400 km, 27.3 days
Synchronous orbit altitude	39,344 km	35,786 km

Derived quantities use standard formulas: Kepler's third law for the year, $g = GM/R^2$, $v_{\text{esc}} = \sqrt{2GM/R}$, T_{eq} from stellar luminosity, distance and albedo, and a simple greenhouse term scaled by pressure and CO₂ for the surface temperature.

8 · Climate, geology and life

SPECULATIVE WORLDBUILDING: this section is imaginative narrative consistent with the parameters, not a result of the simulation.

Climate

With 1.04 times Earth's sunlight, a 23.7° tilt and a 421-day year, Terrena would have Earth-like seasons that each last about 15% longer. The 26.6-hour day would slightly soften the day-night temperature swing and widen the trade-wind belts. A mean of about 18 °C, a few degrees warmer than Earth, would suggest small polar ice caps and broad temperate zones.

Geology

At 1.03 Earth masses and a density of 5.54 g/cm³, Terrena would plausibly have an iron core, a convecting mantle and plate tectonics, which would give it a magnetic field and recycle carbon over long timescales. Its large moon (100% of our Moon's mass, orbiting closer in) would raise strong tides and help stabilise the axial tilt.

Life

In this story, life begins in tidal shallows within a billion years of the oceans forming. Photosynthesis raises oxygen to the modelled 19.7%. Land plants use a teal-shifted pigment tuned to Kestrel's slightly bluer, hotter light, which is where the dark-teal continents in the renders come from. The glowing cyan oceans are an artistic choice for the brand, not a physical prediction.



8 · Atmosphere, clouds, life · 10.6 → 13.91 billion years

Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c6abfed...) · not a physical simulation of a real universe

Stage 8 still: clouds, cyan atmosphere and life colouring the land.

9 · Civilization in 2617

Fictional future, grounded in the seeded numbers.

Feature	Value
Population	12.9 billion
Arcology cities	115, concentrated along the coasts
Orbital ring	794 km altitude, circling the equator (a ring city with habitats and maglev)
Space elevators	3, from the equator through the ring to synchronous orbit at 39,344 km
Fusion grid	63 TW (for scale, humanity used about 19 TW in the 2020s)
Aesthetic	cyan neon cities, a cyan-lit ring and stations, and glittering glints across oceans and orbit

Terrena's 12.9 billion people live mostly in 115 vertical arcology cities along the coasts. That leaves the dark-teal continental interiors to rewilded forest, and at night the coastlines trace the continents in cyan. A 63-terawatt fusion grid powers everything, including an orbital ring 794 km up that carries habitats, shipyards and a maglev loop around the whole world.

3 space elevators rise from the equator through the ring to synchronous orbit 39,344 km up. Because Terrena turns in 26.6 hours instead of 24, its synchronous orbit is a little higher than Earth's. Reaching space has become a routine commute. The moon, 332,609 km away, hosts refineries and telescopes. The glitter seen from orbit is thousands of mirrors, solar sails and station windows catching Kestrel's light.



9 · Civilization (year 2617) · 13.91 billion years (today)
Procedural visualization seeded by real Tuna-17 results (Quantum Inspire job 1476038, seed 2a9a2c6abfed...) · not a physical simulation of a real universe

Stage 9 still: night-side cyan cities, the neon orbital ring and elevators.

10 · How far is it from Earth?

Honest answer: there is no real distance. Terrena exists only inside a separate simulated universe generated from the quantum seed. It is not in our sky, and no telescope could find it.

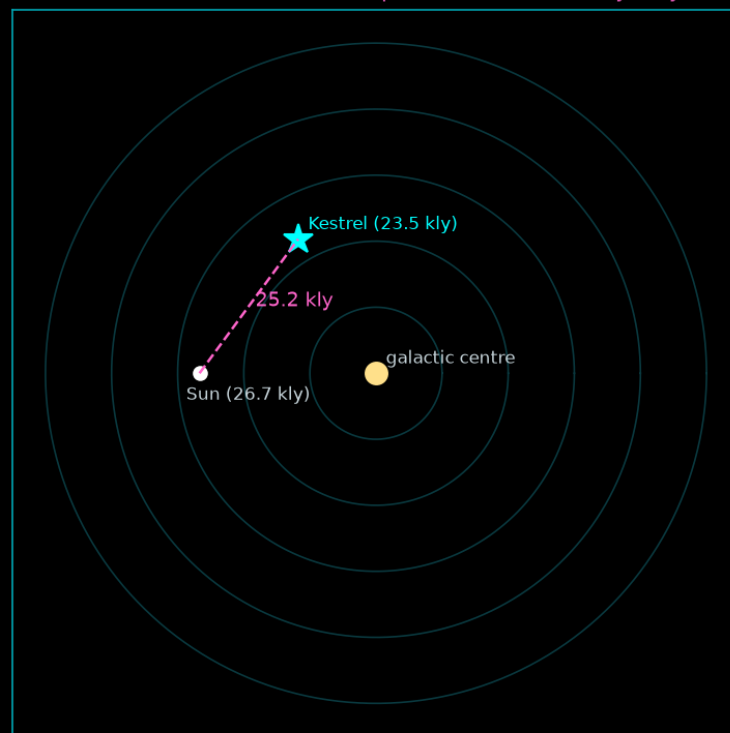
HYPOTHETICAL (FICTIONAL) thought experiment

Suppose Terrena's galaxy were our Milky Way. Kestrel sits 23.48 thousand light-years from the galactic centre (seeded), and the Sun sits about 26.7 thousand light-years out. The seed also chooses the angle between the two around the centre: the first 32 bits of the SHA-256 seed (0x2a9a2c6a) divided by 2^{32} give 0.16642 of a full turn, which is 59.9° .

Law of cosines: $d = \sqrt{(26.7^2 + 23.48^2 - 2 \cdot 26.7 \cdot 23.48 \cdot \cos 59.9^\circ)} = 25.21$ thousand light-years $\approx 25,212$ light-years.

Traveller	Travel time (fictional)
Light (and radio messages)	25,212 years
Futuristic ship at 10% of light speed	252,120 years
Futuristic ship at 50% of light speed	50,424 years (ship time is shorter because of relativity: $\approx 43,668$ years aboard)

HYPOTHETICAL / FICTIONAL placement in the Milky Way



Fictional placement map (face-on, 10 kly rings). For illustration only.

11 · Methods and honesty note

Layer	What it is	How it was made
Quantum	Only the random seed	Real Tuna-17 hardware job 1476038: H on 17 qubits, 1,024 shots, submitted server-side from the Quantum Inspire integration on the VPS. No emulator output was used.
Classical simulation	All physical parameters	Python/NumPy: seeded PCG64 draws around real-universe values; age from a Friedmann integral; $L \propto M^4$ and $R \propto M^{0.8}$ for the star; Kopparapu-style habitable-zone fluxes; rocky mass-radius relation; Kepler's 3rd law; equilibrium temperature plus a simple greenhouse term
Procedural visuals	Video and renders	NumPy/Pillow renderer: Big Bang particles, seeded Gaussian random field for the CMB, Zel'dovich cosmic web, particle spiral galaxy, collapsing noise nebula, Keplerian disk, and a sphere shaded from 3D fractal-noise terrain with sea level set by the seeded ocean fraction. Glitter positions come directly from the shot bitstrings.
Artistic	Style and story	The cyan palette and glitter, the civilization details, and the climate/life narrative. These are creative choices consistent with the numbers, not predictions.

Limits: 17 qubits cannot simulate physics at cosmic scale, and nothing here claims they did. The quantum job supplies true randomness, and everything else is transparent classical computation you can rerun from the seed. The per-bit bias in Figure 1 reflects real hardware noise; SHA-256 hashing removes its effect on the seed.

Deliverables

planet-birth.mp4 (1920×1080, 30 fps, 86 s, H.264) · planet-hero.jpg · planet-hero-small.jpg · universe.json · tuna17_job_1476038.json. Private copies of the job record, universe.json and civilization notes are on the VPS in C:\ubg-workers\universe\.

12 · Appendix: raw parameters & reproducibility

Seed (SHA-256 of the sorted counts JSON + job ID):

2a9a2c6abfedd8403feffc2da789587014071b5f4483fa78a220a466aec66e8e

Reproduce: python sim.py tuna17_job_1476038.json → universe.json (identical output for identical counts).

universe.json

```
{
  "seed_sha256": "2a9a2c6abfedd8403feffc2da789587014071b5f4483fa78a220a466aec66e8e",
  "seed_int_mod_2_64": 11682518194324926094,
  "job": {
    "job_id": 1476038,
    "batch_job_id": 849438,
    "backend": "Tuna-17",
    "shots": 1024,
    "unique": 1017
  },
  "cosmology": {
    "H0": 66.79701662097945,
    "Omega_m": 0.316070217677132,
    "Omega_b": 0.04661507914543266,
    "Omega_Lambda": 0.683929782322868,
    "T_cmb_K": 2.72889647667866,
    "age_Gyr": 13.906516819610667,
    "z_recombination": 1088.0273240030651,
    "t_recombination_yr": 376400.6429477355
  },
  "galaxy": {
    "type": "spiral",
    "arms": 2,
    "stars": 127456238898.64851,
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    "home_radius_kly": 23.483713685085732
  },
  "star": {
    "name": "Kestrel",
    "spectral": "F9V",
    "mass_sun": 1.0699847973049275,
    "lum_sun": 1.310721515766935,
    "radius_sun": 1.0556065727669404,
    "Teff_K": 6011.0852426109495,
    "age_Gyr": 4.338192298085303
  },
  "habitable_zone": {
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      1.918802233316732
    ],
    "conservative_AU": [
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      1.5725964083995607
    ]
  },
  "planet": {
    "name": "Terrena",
    "a_AU": 1.1251210123006539,
    "insolation_earth": 1.0354090523128636,
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  }
}
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"year_days": 421.40557249512835,
"mass_earth": 1.0318431119994618,
"radius_earth": 1.0086259683298477,
"gravity_ms2": 9.949984081824738,
"gravity_g": 1.0142695292379957,
"density_gcc": 5.540830081299003,
"v_escape_kms": 11.318056263150591,
"day_hours": 26.64983276144582,
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"pressure_bar": 1.027980941485555,
"atmosphere": {
  "N2": 0.7938054362789098,
  "O2": 0.1968496598152236,
  "Ar": 0.009,
  "CO2_ppm": 344.90390586666496
},
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"T_eq_K": 257.9251176367982,
"T_surface_K": 291.42690551614385,
"moons": [
  {
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    "period_days": 21.624085701536227
  }
],
"sync_orbit_alt_km": 39344.43650849446
},
"civilization": {
  "year": 2617,
  "population_bn": 12.893942540652214,
  "ring_alt_km": 793.8317140725214,
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  "fusion_TW": 63.26879104415761,
  "arcologies": 115
}
}

```

Circuit file submitted

version 3.0

```

// Uncle Benny universe seed: H on all 17 qubits, measure all
qubit[17] q
bit[17] b

```

```

H q[0]
H q[1]
H q[2]
H q[3]
H q[4]
H q[5]
H q[6]
H q[7]
H q[8]
H q[9]
H q[10]
H q[11]
H q[12]
H q[13]
H q[14]
H q[15]
H q[16]
b = measure q

```