Grannus

Bulk parameters

Classification: Star, red-dwarf
Spectral class: M2V
Radius: 30,170 km (0.425×Ciro)
Mass: 9.54944×10^{27} kg (0.50×Ciro)
Mean density: 83,016 kg/m^3
Surface gravity: 71.4 g (700.195 m/s^2)
Escape velocity: 205,547 m/s
Gravitational parameter: 6.37338×10^{17} m^3/s^2
Luminosity: 1.03012×10^{23} W (0.031×Ciro)
Surface temperature: 3,550 K
Absolute magnitude: +8.8
Planets: Taranis, Nodens, Sirona, Epona, Cernunnos

Orbital parameters

Semimajor axis: 2,000,000,000 km
Perihelion: 1,200,000,000 km
Aphelion: 2,800,000,000 km
Orbit eccentricity: 0.4
Orbit inclination: 7°
Longitude of ascending node: 130°
Argument of periapsis: 20°
Sidereal orbit period: 1,710.63 years (1)
Mean orbital velocity: 798.3 m/s
Sidereal rotation period: 360 hours
Synchronous orbit altitude: 2,974,107 km
Sphere of influence: 500,000,000 km
Time of periapsis passage: Y79, D133

Atmosphere

Overall height: 400,000 m
Pressure, datum: 0.1 atm (10.1325 kPa)
Temperature range: 2,600-6,000 K
Mean molecular weight: 1.3 g/mol
Composition: 90% H, 10% He

Taranis

Bulk parameters

Classification: Planet, terrestrial
Radius: 200 km
Mass: 1.17549×10^{21} kg
Mean density: 35,078 kg/m^3
Surface gravity: 0.2 g (1.9613 m/s^2)
Escape velocity: 886 m/s
Gravitational parameter: 7.84532×10^{10} m^3/s^2
Albedo: 0.20
Solar irradiance: 121,260 W/m^2
Black-body temperature: 809 K
Natural satellites: none

Orbital parameters

Semimajor axis: 260,000 km
Perihelion: 252,200 km
Aphelion: 267,800 km
Orbit eccentricity: 0.03
Orbit inclination: 9°, 1.93° to ecliptic [(2)]
Longitude of ascending node: 140°
Argument of periapsis: 345°
Sidereal orbit period: 9.6154 hours
Mean orbital velocity: 49,511 m/s
Sidereal rotation period: 9.6154 hours
Length of solar day: tidal locked
Obliquity to orbit: 9°
Synchronous orbit altitude: not possible
Sphere of influence: 448 km

Nodens

Bulk parameters

Classification: Planet, terrestrial
Radius: 700 km
Mass: 7.91987×10^{22} kg
Mean density: 55,123 kg/m^3
Surface gravity: 1.1 g (10.7873 m/s^2)
Escape velocity: 3,886 m/s
Gravitational parameter: 5.28578×10^{12} m^3/s^2
Albedo: 0.30
Solar irradiance: 1,333 W/m^2
Black-body temperature: 253 K
Natural satellites: Belisama

Orbital parameters

Semimajor axis: 2,479,976 km
Perihelion: 2,430,376 km
Aphelion: 2,529,575 km
Orbit eccentricity: 0.02
Orbit inclination: 10°, 0.87° to ecliptic
Longitude of ascending node: 155°
Argument of periapsis: 30°
Sidereal orbit period: 45.000 days [3]
Mean orbital velocity: 16,031 m/s
Sidereal rotation period: 67.500 hours
Length of solar day: 90.000 hours
Obliquity to orbit: 10°
Synchronous orbit altitude: 19,221 km
Sphere of influence: 23,011 km

Atmosphere

Overall height: 72,000 m
Pressure, sea level: 2 atm (202.65 kPa)
Mean temperature, sea level: 296 K (23 °C)
Mean molecular weight: 28.65 g/mol
Composition: 83% N_2, 15% O_2, 1% H_2O, 0.5% CO_2, 0.5% Ar

Belisama

Bulk parameters

Classification: Moon (Nodens)
Radius: 250 km
Mass: 2.47955×10^{21} kg
Mean density: 37,885 kg/m^3
Surface gravity: 0.27 g (2.6478 m/s^2)
Escape velocity: 1,151 m/s
Gravitational parameter: 1.65487×10^{11} m^3/s^2
Albedo: 0.25
Solar irradiance: 1,333 W/m^2
Black-body temperature: 258 K

Orbital parameters

Semimajor axis: 19,921 km
Perihelion: 19,423 km
Aphelion: 20,419 km
Orbit eccentricity: 0.025
Orbit inclination: 9.5°, 2.58° to ecliptic
Longitude of ascending node: 135°
Argument of periapsis: 165°
Sidereal orbit period: 11.250 days
Synodic period: 15.000 days
Mean orbital velocity: 515.1 m/s
Sidereal rotation period: 67.500 hours
Length of solar day: 90.000 hours
Obliquity to orbit: 9.5°
Synchronous orbit altitude: not possible
Sphere of influence: 4,984 km

Sirona

Bulk parameters

Classification: Planet, gas giant
Radius: 3,000 km
Mass: 1.32243×10^{24} kg
Mean density: 11,693 kg/m^3
Surface gravity: 1 g (9.80665 m/s^2)
Escape velocity: 7,671 m/s
Gravitational parameter: 8.825985×10^{13} m^3/s^2
Albedo: 0.40
Solar irradiance: 57.9 W/m^2
Black-body temperature: 111 K
Natural satellites: Airmed, Brovo, Damona
Planetary ring system: Yes

Orbital parameters

Semimajor axis: 11,900,000 km
Perihelion: 11,424,000 km
Aphelion: 12,376,000 km
Orbit eccentricity: 0.04
Orbit inclination: 10°, 0° to ecliptic
Longitude of ascending node: 150°
Argument of periapsis: 0°
Sidereal orbit period: 473.00 days
Mean orbital velocity: 7,318 m/s
Sidereal rotation period: 16.000 hours
Length of solar day: 16.091 hours
Obliquity to orbit: 10°
Synchronous orbit altitude: 16,502 km
Sphere of influence: 340,490 km

Atmosphere

Overall height: 540,000 m
Pressure, datum: 15 atm (1519.875 kPa)
Mean temperature, datum: 265 K (-8 °C)
Mean molecular weight: 2.59 g/mol
Composition: 83% H_2, 15% He, 2% CH_4

Airmed

Bulk parameters

Classification: Moon (Sirona)
Radius: 160 km
Mass: 5.64236×10^{20} kg
Mean density: 32,886 kg/m^3
Surface gravity: 0.15 g (1.4710 m/s^2)
Escape velocity: 686 m/s
Gravitational parameter: 3.76575×10^{10} m^3/s^2
Albedo: 0.20
Solar irradiance: 57.9 W/m^2
Black-body temperature: 120 K

Orbital parameters

Semimajor axis: 35,000 km
Perihelion: 34,650 km
Aphelion: 35,350 km
Orbit eccentricity: 0.01
Orbit inclination: 1°, 9.15° to ecliptic
Longitude of ascending node: 120°
Argument of periapsis: 90°
Sidereal orbit period: 6.4113 days
Synodic period: 6.4994 days
Mean orbital velocity: 1,588 m/s
Sidereal rotation period: 38.468 hours
Length of solar day: 38.996 hours
Obliquity to orbit: 1°
Synchronous orbit altitude: not possible
Sphere of influence: 1,571 km

Brovo

Bulk parameters

Classification: Moon (Sirona)
Radius: 300 km
Mass: 4.62850×10^{21} kg
Mean density: 40,925 kg/m^3
Surface gravity: 0.35 g (3.4323 m/s^2)
Escape velocity: 1,435 m/s
Gravitational parameter: 3.08909×10^{11} m^3/s^2
Albedo: 0.27
Solar irradiance: 57.9 W/m^2
Black-body temperature: 117 K

Orbital parameters

Semimajor axis: 70,000 km
Perihelion: 68,600 km
Aphelion: 71,400 km
Orbit eccentricity: 0.02
Orbit inclination: 0.5°, 9.5° to ecliptic
Longitude of ascending node: 150°
Argument of periapsis: 30°
Sidereal orbit period: 18.134 days
Synodic period: 18.857 days
Mean orbital velocity: 1,123 m/s
Sidereal rotation period: 108.80 hours
Length of solar day: 113.14 hours
Obliquity to orbit: 0.5°
Synchronous orbit altitude: not possible
Sphere of influence: 7,290 km

Atmosphere

Overall height: 72,000 m
Pressure, datum: 0.15 atm (15.19875 kPa)
Mean temperature, datum: 127 K (-149 °C)
Mean molecular weight: 27.89 g/mol
Composition: 97% N_2, 2% CH_4, 1% Ar

Damona

Bulk parameters

Classification: Moon (Sirona)
Radius: 80 km
Mass: 5.64236×10^{19} kg
Mean density: 26,309 kg/m^3
Surface gravity: 0.06 g (0.5884 m/s^2)
Escape velocity: 307 m/s
Gravitational parameter: 3.76575×10^9 m^3/s^2
Albedo: 0.20
Solar irradiance: 57.9 W/m^2
Black-body temperature: 120 K

Orbital parameters

Semimajor axis: 120,000 km
Perihelion: 114,000 km
Aphelion: 126,000 km
Orbit eccentricity: 0.05
Orbit inclination: 4°, 8.71° to ecliptic
Longitude of ascending node: 210°
Argument of periapsis: 300°
Sidereal orbit period: 40.702 days
Synodic period: 44.534 days
Mean orbital velocity: 857.6 m/s
Sidereal rotation period: 244.21 hours
Length of solar day: 267.21 hours
Obliquity to orbit: 4°
Synchronous orbit altitude: not possible
Sphere of influence: 2,144 km

Epona

Bulk parameters

Classification: Planet
Radius: 500 km
Mass: 2.20405×10^{22} kg
Mean density: 42,094 kg/m^3
Surface gravity: 0.6 g (5.8840 m/s^2)
Escape velocity: 2,426 m/s
Gravitational parameter: 1.47100×10^{12} m^3/s^2
Albedo: 0.35
Solar irradiance: 14.8 W/m^2
Black-body temperature: 81 K
Natural satellites: Rosmerta, RAB-58E

Orbital parameters

Semimajor axis: 23,500,000 km
Perihelion: 22,090,000 km
Aphelion: 24,910,000 km
Orbit eccentricity: 0.06
Orbit inclination: 11°, 1.35° to ecliptic
Longitude of ascending node: 145°
Argument of periapsis: 90°
Sidereal orbit period: 1,312.6 days
Mean orbital velocity: 5,208 m/s
Sidereal rotation period: 10.000 hours
Length of solar day: 10.013 hours
Obliquity to orbit: 11°
Synchronous orbit altitude: 3,142 km
Sphere of influence: 130,727 km

Atmosphere

Overall height: 41,000 m
Pressure, datum: 1 atm (101.325 kPa)
Mean temperature, datum: 91 K (-182 °C)
Mean molecular weight: 27.95 g/mol
Composition: 98.5% N_2, 1% CH_4, 0.5% Ar

Rosmerta

Bulk parameters

Classification: Moon (Epona)
Radius: 50 km
Mass: 1.10203×10^{19} kg
Mean density: 21,047 kg/m^3
Surface gravity: 0.03 g (0.2942 m/s^2)
Escape velocity: 172 m/s
Gravitational parameter: 7.35499×10^8 m^3/s^2
Albedo: 0.35
Solar irradiance: 14.8 W/m^2
Black-body temperature: 81 K

Orbital parameters

Semimajor axis: 17,000 km
Perihelion: 15,810 km
Aphelion: 18,190 km
Orbit eccentricity: 0.07
Orbit inclination: 6°, 5.66° to ecliptic
Longitude of ascending node: 180°
Argument of periapsis: 60°
Sidereal orbit period: 16.811 days
Synodic period: 17.029 days
Mean orbital velocity: 294.2 m/s
Sidereal rotation period: 100.87 hours
Length of solar day: 102.17 hours
Obliquity to orbit: 6°
Synchronous orbit altitude: not possible
Sphere of influence: 813 km

RAB-58E

Bulk parameters

Classification: Moon (Epona)
Radius: 10 km
Mass: 7.34682×10^{16} kg
Mean density: 17,539 kg/m^3
Surface gravity: 0.005 g (0.04903 m/s^2)
Escape velocity: 31.3 m/s
Gravitational parameter: 4.90333×10^6 m^3/s^2
Albedo: 0.3
Solar irradiance: 14.8 W/m^2
Black-body temperature: 82 K

Orbital parameters

Semimajor axis: 90,000 km
Perihelion: 54,000 km
Aphelion: 126,000 km
Orbit eccentricity: 0.4
Orbit inclination: 160°, 160.2° to ecliptic
Longitude of ascending node: 225°
Argument of periapsis: 180°
Sidereal orbit period: 204.78 days
Synodic period: 242.63 days
Mean orbital velocity: 127.8 m/s
Sidereal rotation period: 4.000 hours
Length of solar day: 4.002 hours
Obliquity to orbit: 20°
Synchronous orbit altitude: 19.53 km
Sphere of influence: 580 km

Cernunnos

Bulk parameters

Classification: Dwarf planet
Radius: 120 km
Mass: 1.48112×10^{20} kg
Mean density: 20,462 kg/m^3
Surface gravity: 0.07 g (0.6865 m/s^2)
Escape velocity: 406 m/s
Gravitational parameter: 9.88510×10^9 m^3/s^2
Albedo: 0.4
Solar irradiance: 5.9 W/m^2
Black-body temperature: 63 K
Natural satellites: none

Orbital parameters

Semimajor axis: 37,300,000 km
Perihelion: 30,772,500 km
Aphelion: 43,827,500 km
Orbit eccentricity: 0.175
Orbit inclination: 4°, 6.83° to ecliptic
Longitude of ascending node: 120°
Argument of periapsis: 180°
Sidereal orbit period: 2,624.9 days
Mean orbital velocity: 4,134 m/s
Sidereal rotation period: 6.000 hours
Length of solar day: 6.002 hours
Obliquity to orbit: 4°
Synchronous orbit altitude: 368.9 km
Sphere of influence: 28,051 km

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(1) Years based on Gael year of 426 six-hour days (2,556 hours total).
(2) Ecliptic plane for Grannus is defined by the plane containing Sirona's orbit.
(3) Days based on Gael solar day of 6 hours.