COSMIC EVERYTHING CHART — MASS vs. DENSITY (High density extreme: SGM vs. GR)

Appears as Figure 27 in: Speed of Light and Rates of Clocks in the Space Generation Model of Gravitation, Part 1.

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Planck Mass at Planck Radius and Planck Density is way off the chart. This contrived, unphysical concoction would be located where these two lines intersect.

The Space Generation Model (SGM) predicts that the pattern established below the nuclear density zone continues above it. Data points stay on the chart, continuing on the same trajectory. They do not fly off the chart or hit an imaginary edge and bounce back, as General Relativity predicts. General Relativity clearly breaks at the Schwarzschild horizon line. Crosses do not represent physical objects; they are geometric indicators of infinitely dense nonsense.

Fiducial atomic density defined as the mass of a hydrogen nucleus centered on a Bohr-radius sphere (about the density of aluminum).

Solar System point indicates transitional size between vast gulf in scale, as stars and planets condense out of much larger clouds and clusters.

Less pronounced instability gaps are found between Sun-like stars and White Dwarfs, White Dwarfs and Neutron Stars, within the range of other stars, and elsewhere.

Base gravitational energy density (converted to mass-equivalent). Unobservable because swamped by electromagnetic energy density. Echo of pattern 47 orders of magnitude higher.

\[ \rho_0 = \frac{\frac{256}{\alpha^2} \rho_s}{G m_0 c^2} \]

\[ \rho_s = \frac{\frac{64}{\alpha^2} \rho_s}{G m_0 c^2} \]

\[ \rho_n = \frac{\frac{16}{\alpha^2} \rho_s}{G m_0 c^2} \]

\[ \rho_w = \frac{\frac{4}{\alpha^2} \rho_s}{G m_0 c^2} \]

\[ \rho_{\text{inst}} = \frac{1}{2} \frac{E_{\text{inst}}}{c^2} = \frac{3}{4 \pi} \frac{G m_0 m_e}{a_0^2} \approx 4.56 \times 10^{-33} \text{ kg m}^{-3} \]

\[ \rho_m = \rho_s \frac{1}{A} \approx 1.67 \times 10^{-18} \text{ kg m}^{-3} \]

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\[ \rho_w = \frac{1}{2} \frac{E_{\text{inst}}}{c^2} = \frac{3}{4 \pi} \frac{G m_0 m_e}{a_0^2} \approx 3.44 \times 10^{-13} \text{ kg m}^{-3} \]

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