How does the mass of a proton arise in HGD cosmology?

Commentary by Carl H. Gibson on Temple (2016)[i]
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Abstract

Protons and neutrons provide most of the mass of the collisional components of the universe. Collisional fluid mechanics of hydrogravitational dynamics (HGD) cosmology describes the formation of basic structures in the universe such as planets, stars, proto-globular-star-clusters (PGCs), protogalaxies (PGs), galaxy clusters and superclusters. Collisionless ΛCDMHC cosmology cannot explain the formation of these structures or the flood of observations that falsify its predictions.

Discussion and Conclusions

Standard models of physics and particle physics are doomed to failure because the collisionless fluid mechanics assumption of the collisionless Boltzmann's equation makes turbulence, fossil turbulence and critical phase transitions of HGD cosmology impossible. Turbulence defined by the inertial vortex force **vxw** shows that the big bang is a turbulent combustion instability with immense power at Planck conditions. Conservation of energy, momentum, angular momentum and entropy with collisional fluid mechanics captures most of the physics as shown in the figure.

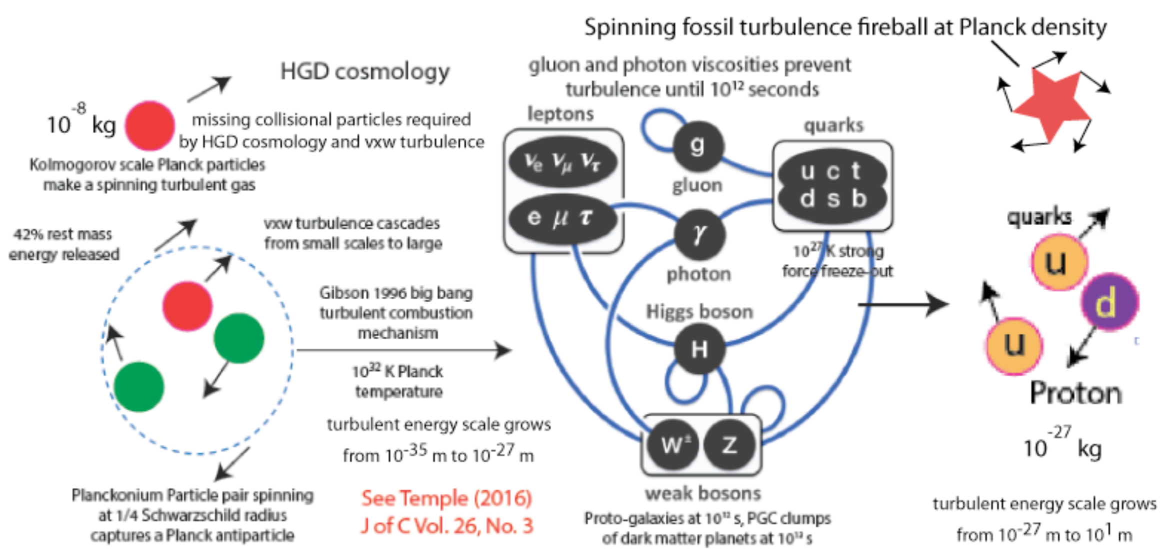

Figure JC2016.3.1 Shows a path to the existence of protons from Hydro-Gravitational Dynamics HGD cosmology, Gibson (1996). On the left, Planck temperatures of 10^32 K are achieved from a big crunch event, so only Planck particles (red) and Planck antiparticles (green) can exist. Both have mass 10^-8 kg from dimensional analysis using c, h, and G, compared to 10^-27 kg for a proton, where c is the speed of light, h is Planck's constant, and G is Newton's constant. The Planck temperature can be derived by including the Boltzmann constant k. A gas of Kolmogorov scale Planck particles becomes turbulent because the Planckonium pair accretes a Planck antiparticle so the Planck particle gas must become turbulent by collisional fluid mechanics. The Taylor microscale Reynolds number of the flow is ~ 10^3. Inertial vortex forces **vxw** of local Planck particle jets create negative pressures < -10^-113 Pa sufficient to extract mass energy from the vacuum, powering inflation and the exponential expansion of the universe. A spinning fossil turbulence fireball results, shown as a spinning red star with Planck density and size 1 to 10 m and the mass of the universe. Protons are **uud** quark triplets. Neutrons are **ddu** quark triplets. Both are created in 10^2 s after the "big bang" turbulence event stretched and extended by a turbulent gluon-viscous inflation. The universe is born powered by inertial vortex forces stretching vortex lines. Photon-electron viscosity prevents turbulence until ~ 10^12 s when 10^20 m protogalaxies fragment along fossil big bang turbulence vortex lines, as observed. Many non-baryonic dark matter particles like neutrinos diffuse to much larger scales than galaxies. Dark matter planets in Jeans mass clumps of a trillion begin star formation at 10^13 seconds, not 10^16 s predicted by ΛCDMHC when it is too cold for life formation. Black hole, dark energy, and cold dark matter concepts of ΛCDMHC cosmology are not needed, and are misleading in the interpretation of astrophysical observations.

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[i] Journal of Cosmology, 2016, Volume 26, Number 3, pp 13870-13950, The mass of the proton, Robert Temple