A Feasible Test of Temporal Curvature Physics

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Abstract: after some past deliberation, a feasible decisive test of temporal curvature physics is developed and presented. It should not be prohibitively expensive nor technologically infeasible.

One of the premises of TCP, temporal curvature physics, is that gravitation is a kind of residual of the strong nuclear force. Another is that antimatter has a reverse signature in the temporal domain analogous to convex vs concave lenses. A natural consequence of that is time-contraction vs dilation: if TCP is correct, time should speed up near antimatter as it slows near matter. But by how much?

Time is approximately 4 times slower near the surface of a matter neutron star. It is assumed in this discussion that time also slows near the surface of a matter neutron by the same rate. If TCP is valid, the opposite should be true regarding antimatter: time near the surface of an antimatter neutron star and near the surface of an anti-neutron should speed up by a factor of 4. This allows a feasible test of the theory.

Matter slows time by the rough factor above, 4; empty space devoid of matter and antimatter has no dilation/contraction factor, we can label that 1; antimatter speeds up time with stipulations above again by a factor of 4. Relatively speaking, time passes 16 times faster near the surface of an antimatter neutron star vs near the surface of a matter neutron star. And the same should be true comparing anti-nuclei vs matter nuclei. Ergo, any nuclear processes relating to antimatter should complete 16 times faster than nuclear processes involving matter.

At the time of writing, a facility at CERN has successfully produced anti-nuclei with atomic mass less than 8. Previously, this author suggested we use anti-beryllium, that should have an extremely short half-life, to test the theory. But producing and isolating anti-beryllium may be cost-prohibitive, currently infeasible. Next, we suggested anti-neutrons, but for different reasons, also may be currently infeasible. After much consideration, the current maximally feasible candidate may be anti-tritium.

It may be possible to develop a kind of magnetic centrifuge to separate anti-nuclei of varying atomic mass therefore isolating a sufficient amount of anti-tritium so that the associated half-life can accurately be measured. So some technology would have to be developed in order to test TCP.

What would be the consequences if proven correct? Vast and profound: it would explain why we don't observe anti-galaxies, anti-stars, baryon asymmetry, and several other features of our cosmos. If this author is proven incorrect, at least he's learned how the universe is Not, in the last 40 years of independent research. But we All deserve to know the truth regardless.

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PS: tritium has a half-life of 12.32 years, anti-tritium should have a half-life of 9.24 months, if we can collect and confirm just 30 anti-tritium nuclei, 15 of them should decay into anti-helium-3 within that period, and those should be easily separable from the original anti-tritium.