

Abstract Submitted  
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**Unifying Gravity and EM in Detail** DOUGLAS SWEETSER — Unify gravity and EM with the simplest asymmetric field strength tensor:

$$S_{GEM} = \int \sqrt{-g} d^4x \left( -(J_q^\nu - J_m^\nu) A_\nu - \frac{1}{4c^2} \nabla^\mu A^\nu \nabla_\mu A_\nu \right)$$

Particles with equal charges but different masses move differently, so mass charge breaks EM gauge symmetry. The field equations arise by varying the action with respect to the 4-potential, the metric is fixed up to a diffeomorphism.

$$J_q^\nu - J_m^\nu = \nabla_\mu \nabla^\mu A^\nu$$

With a constant potential, the exponential Rosen metric solves the field equations consistent with current tests of gravity, but predicts 0.7  $\mu$ arcseconds more bending around the Sun than the Schwarzschild metric of GR. All supporting calculations are done in detail.

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