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Scaling and Orbits for an Isotropic Metric JOSEPH D. RUDMIN, James Madison University — Scaling of physical quantities shows the symmetries of an isotropic metric, which is not conformally flat, and its corresponding energy equation. For example, diagonalization of the metric yields its local rest frame. Agreement on the value of Planck's constant across all reference frames provides self- consistency for quantum mechanics under general relativity. In contrast to a Schwarzschild metric, transitivity of scaling for an isotropic metric results in conservation of momentum and energy as measured by observers in gravitational wells. Gravitational scattering, orbital period, and orbital precession offer opportunities to experimentally distinguish between isotropic and Schwarzschild metrics. In particular, stable orbits exist at all distances from an event horizon.

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