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New Generally Covariant Generalization of the Dirac Equation Not Requiring Gauges DAVID MAKER, PRA — We introduce a new pde ($\Sigma_\mu \sqrt{\kappa_{\mu\mu}}\gamma_\mu \partial\psi/\partial x_\mu - \omega\psi = 0$) with spherically symmetric diagonalized $\kappa_{00} = 1 - r_H/r = 1/\kappa_{rr}$ giving it general covariance. If $r_H = 2e^2/m_e c^2$ this new pde reduces to the standard Dirac equation as $r \to \infty$. Next we solve this equation directly using separation of variables (e.g., 2P, 2S, 1S terms). Note metric time component $\kappa_{oo} = 0$ at $r = r_H$ and so clocks slow down with *baryon stability* the result. Note also that near r_H the $2P_{3/2}$ state for this new Dirac equation gives a azimuthal trifolium, 3 lobe shape; so this **ONE** charge*e* (so don't need *color* to guarantee this) spends 1/3 of its time in each lobe (*fractionally charged* lobes), the lobe structure is locked into the center of mass (*asymptotic freedom*), there are *six* 2P states (corresponding to the 6 flavors); the P wave scattering gives the *jets*, all these properties together constituting the *main properties of quarks!* without invoking the many free parameters, gauge conditions of QCD. Also the $2S_{1/2}$ is the *tauon* and the $1S_{1/2}$ is the *muon* here. The S matrix of this new pde gives the *W and Z as resonances and does not require renormalization counterterms or free parameters.* Thus we get nuclear, weak and E&M phenomenology as *one* step solutions of this new pde.

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