Abstract Submitted
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**A PEP model of the electron.** R.L. COLLINS, retired UT Austin — One of the more profound mysteries of physics is how nature ties together EM fields to form an electron. A way to do this is examined in this study. A bare magnetic dipole containing a flux quantum spins stably, and produces an inverse square **E= -vxB** electric field similar to what one finds from "charge". Gauss' law finds charge in this model, though there be none. For stability, a current loop about the waist of the magnetic dipole is needed and we must go beyond the classical Maxwell's equations to find it. A spinning **E** field is equivalent to an electric displacement current. The sideways motion of the spinning **E** (of constant magnitude) creates a little-recognized transverse electric displacement current about the waist. Transverse motion of **E** supports the dipolar **B** field, **B=vxE**/c^2. Beyond the very core of the magnetic dipole, each of these two velocities is essentially c and **vxE**/c^2 = **vx(-vxB)**/c^2 = **B**. The anisotropy of the vxB field is cured by precession about an inclined axis. Choosing a Bohr magneton for the magnetic dipole and assuming it spins at the Compton frequency, Gauss' law finds Q = e. Charge is useful but not fundamental. With this, Maxwell's equations can be written in terms of the E and B fields alone.

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