Abstract Submitted
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The PEP electron R.L. COLLINS, retired, U.T. Austin — The main problem in finding a PEP (purely electromagnetic) model is, how to make charge using only solenoidal EM fields? A model has been found that creates an inverse square vxB field that mimics the E field from a charge. To see this, spin a skinny loop of B about a vertical diameter: the vxB field on one side points inwards and on the other outwards. Gauss' law finds no net charge. Now translate the spin axis to the left edge. vxB is twice as large on right, and zero on left. Gauss' law finds a net charge within, the sign depending on the direction of spin. This can be expanded to describe a spinning magnetic dipole. The PEP electron oscillates between configurations of a magnetic dipole and a toroidal E field, at the Compton frequency mc2/h. Flux is quantized, ensuring stability. In integral form, Gauss' law finds charge. But divergence vxB is zero, on average. What, no charge density? This enigma arises because charge is a mathematical construct, and is not a real substance. What is the size of an electron? Size conventionally means the part that contains charge. When measured by Coulomb scattering, the electron is a point particle, without size,. Despite this, the EM structure itself is very large, the vxB fields extending to infinity. The size can be zero or infinity, according what one measures. More at arxiv/physics/0611266.

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