Ponderomotive Push
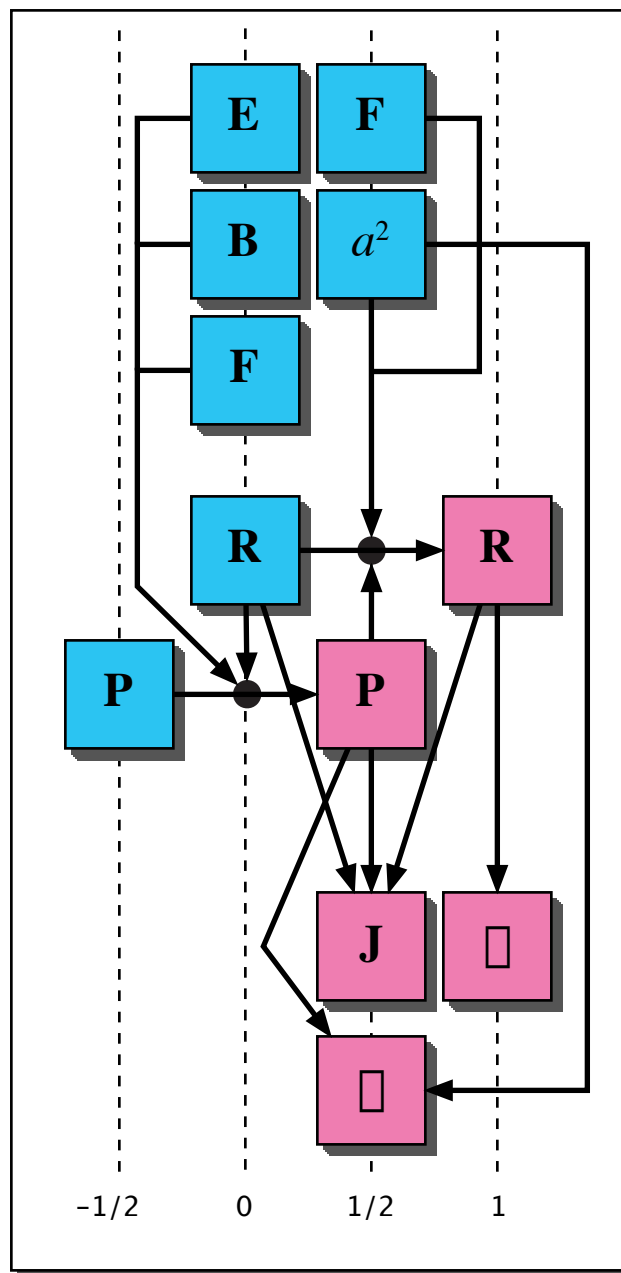

$$_t\mathbf{P} = q\left(\mathbf{E} + \mathbf{v} \times \mathbf{B} - \frac{1}{4}\frac{q}{\langle \gamma m \rangle}\nabla|a|^2\right)$$

$$\langle \gamma m \rangle = \sqrt{m^2 + P^2 + \frac{q^2|a|^2}{2}}$$

$$\chi = \frac{j}{a} = -\sum_i \frac{q_i \rho_i}{\langle \gamma m \rangle_i}$$