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Motion:

$$r = r(t) = r_x(t_x) - r_0(t_0) = \Delta r(\Delta t) \quad (1)$$
$$\stackrel{Path}{=} State(arrival) - State(start) = Trajectory(Change)$$

$$v = \dot{r} = \frac{d}{dt}r \quad p = \frac{1}{v}\sqrt{E^2 - (mv^2)^2} \quad F = \dot{p} = \frac{d}{dt}p \quad (2)$$

Energy total:

$$E = Motion_{Energy} + Rest_{Energy} = E_{kin} + E_{pot} \quad (3)$$