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Motion:

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

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

Energy total:

$$E = Motion_{Energy} + Rest_{Energy} = E_{kin} + E_{pot} \tag{3}$$

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