A long slender rod is impulsively loaded sending a uniaxial (1-D) stress wave down the rod. Hence, the only non-zero stress is σ_{11}.

linear, elastic, isotropic

$u(x_1,t)$ = axial displacement

Assuming **small strain theory** derive a partial differential equation for the axial displacement $u(x_1,t)$.

Neglect body forces!