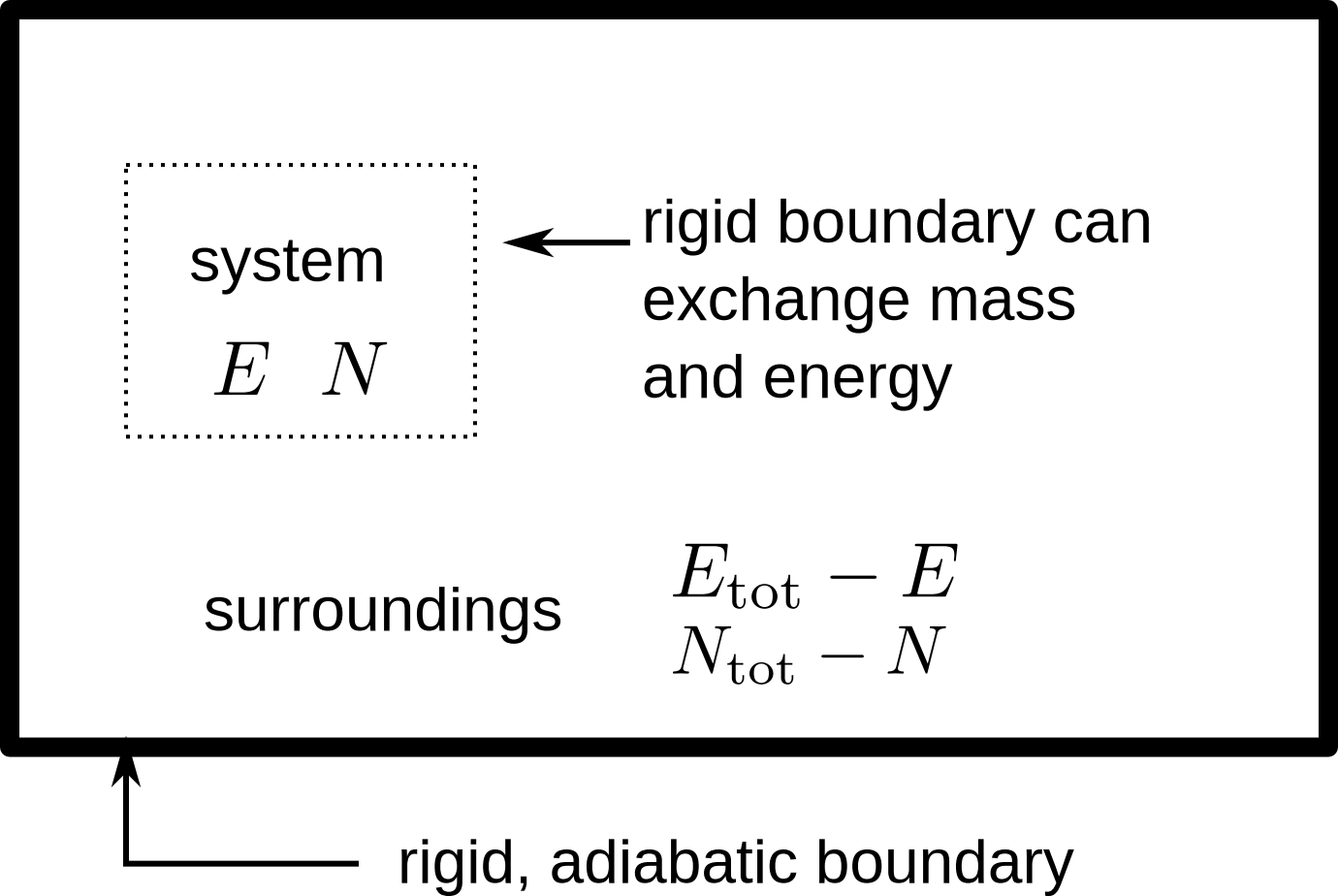
system
E N
rigid boundary can exchange mass and energy
surroundings
$E_{\mathrm{tot}} - E$
$N_{\mathrm{tot}} - N$
rigid, adiabatic boundary