Energy of configuration

$$E(t) = \sum \psi(\alpha_i)\cdot \frac{1}{Lk}\, l_i(\alpha_i,t)\cdot Lk = L\int_\Omega \psi(\alpha)\rho(\alpha,t)\,d\alpha$$

Dissipation inequality

$$\mu_0 \int_{t_0}^{t_0+\tau}\int_\Omega \left|\frac{\partial\rho}{\partial t}\right|^2 d\alpha\,dt + \int_\Omega \psi(\alpha)\rho(\alpha,t_0+\tau)\,d\alpha \leq \int_\Omega \psi(\alpha)\rho(\alpha,t_0)\,d\alpha$$

Modeling assumptions

upscaled from configuration $\longrightarrow$ character
entropic contribution

$$+\int_\Omega \rho\log\rho\,d\alpha$$

corrected dissipation inequality

$$\mu_0 \int_{t_0}^{t_0+\tau}\int_\Omega \left(\frac{\partial\rho}{\partial t}\right)^2 d\alpha\,dt + \int_\Omega (\psi\rho + \lambda\rho\log\rho)\,d\alpha\Big|_{t_0+\tau} \leq \int_\Omega (\psi\rho + \lambda\rho\log\rho)\,d\alpha\Big|_{t_0}$$

$E(t) \sim$ internal energy

$F(\rho) = F_\lambda(\rho) = E(t) + \lambda\int_\Omega \rho\log\rho\,d\alpha$ free energy

still needs to be corrected

don't know this

may be determined by theory