1.8 Thermodynamic Contacts: The isolated system

heat isolation

S2: The world

No interactions with S2:

- fixed volume V
- fixed particle number N
- fixed energy U

Controlled by the system:

- p: pressure
- T: temperature
- μ: chemical potential

Thermodynamic equilibrium: no changes in time $\Rightarrow$ State(V, N, U)
Example: two kinds of atoms: N_A, N_B in an isolated closed chamber; chemical reactions are allowed, e.g. 2A $\rightarrow$ B
μ_A, μ_B, p, T will change as a function of time.

More examples:

- the universe
- our sun system