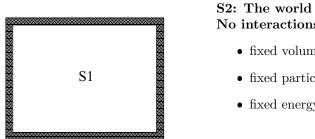
1.8 Thermodynamic Contacts: The isolated system



 No interactions with S2:
 Controlled by the system:

 • fixed volume V
 • p: pressure

 • fixed particle number N
 • T: temperature

 • fixed energy U
 • μ: chemical potential

heat isolation

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

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