

## **Thermodynamic transition associated with irregularly ordered ground states in a lattice gas model**

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The ground state of a crystal is described by the repetition of a unit cell. Recalling that the repetition is a simple deterministic rule generating an infinite size pattern from a finite size pattern, we become curious about equilibrium systems with ground states described by other deterministic rules than the repetition. Note that the entropy density in such deterministic ground states is zero in the thermodynamic limit. In this sense, the ground states are ordered similarly to crystals. We call them irregularly ordered ground states.