

Generalized Microcanonical Ensemble: from Quantum to Classical

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We start with arguing that construction of microcanonical ensemble for quantum integrable system is a nontrivial task. In classical quantum integrable system, however, construction of generalized microcanonical ensemble is clear. We propose an operational construction of generalized microcanonical ensemble guided by classical counterpart and motivated by generalized Gibbs ensemble. It is simply in the form of multivariable Gaussian ensemble determined by first and second moments of conserved quantities. We go over advantages of our construction and apply the ensemble to simple systems and a quantum many-body systems.