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**Finite-size scaling of eigenstate thermalization** WOUTER BEUGELING, RODERICH MOESSNER, MASUD HAQUE, Max Planck Institute for the Physics of Complex Systems (MPI-PKS), Dresden, Germany — According to the eigenstate thermalization hypothesis (ETH), even isolated quantum systems can thermalize because the eigenstate-to-eigenstate fluctuations of typical observables vanish in the limit of large systems. Since isolated systems are by nature finite, the finite-size scaling of such fluctuations is a central aspect of the ETH. We propose that for generic non-integrable systems these fluctuations scale with a universal power law in the dimension of the Hilbert space. We present extensive multiple-system numerical evidence for this scaling law and provide supporting arguments. We also show how the scaling changes when approaching integrability.

Wouter Beugeling  
Max Planck Institute for the Physics of Complex Systems  
(MPI-PKS), Dresden, Germany

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