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Mardias Coefficient of Multivariate Kurtosis as a Measure of Thermalization[1] LAURA WADLEIGH, NICHOLAS KOWALSKI, BRIAN DEMARCO, University of Illinois at Urbana-Champaign — The thermalization of strongly interacting, disordered quantum systems is not fully understood. Differentiating between pre-thermalized, metastable, and statistically thermalized states is challenging. We have developed a technique to use Mardias coefficient of multivariate kurtosis to quantify if an atomic gas has fully thermalized. We measure the in-situ density profile of thermal Bose gas for variable hold times after a perturbation has been applied using a repulsive optical potential. We find that Mardias coefficient is sensitive to small deviations from equilibrium.

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