Abstract Submitted
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Quantum Chaos and Thermodynamics of Self-Bound Mesoscopic Systems VLADIMIR ZELEVINSKY, Michigan State University — There are different languages for description of excited states in small self-bound systems, like complex nuclei: in terms of thermodynamical concepts (temperature and entropy) or in terms of properties of individual quantum levels at given excitation energy. Are such descriptions complementary, mutually exclusive or equivalent? We give arguments in favor of equivalence of these approaches under an appropriate choice of a "thermometer." Many-body quantum chaos serves as a stirring instrument that mixes close eigenfunctions and introduces a smoothly evolving degree of complexity as a necessary feature of thermal equilibrium. With a consistent choice of the mean field, a quasiparticle thermometer can do the job extending the region of validity of Fermi-liquid theory. The incoherent parts of residual interaction play the role of a heat bath.

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