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Bounds on the Density of States for Schrödinger Operators

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Abstract. I will describe bounds on the density of states of Schrödinger operators. These are deterministic results that do not require the existence of the integrated density of states. The results are stated in terms of a “density of states outer-measure,” which always exists. We prove log-Hölder continuity for the density of states in one, two, and three dimensions for continuous Schrödinger operators, and in any dimension for discrete Schrödinger operators. In particular, we recover the Craig–Simon result of log-Hölder continuity of the integrated density of states for discrete and one-dimensional continuous ergodic Schrödinger operators, and prove log-Hölder continuity of the integrated density of states for two- and three-dimensional continuous Schrödinger operators. (Joint work with J. Bourgain)