ON THE ENTROPY FOR NON-COMMUTATIVE DYNAMICAL SYSTEMS

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The aim of this paper is to define an entropy for quantum dynamical systems. To do this we first review the definition and basic properties of the Kolmogorov–Sinai entropy for classical dynamical systems. Introducing the notion of quantum dynamical systems, we define a quantum dynamical entropy and study basic properties of the entropy according to the steps in which the entropy and basic properties were introduced in classical dynamical systems. Especially if quantum dynamical systems are commutative, the quantum entropy is mathematically equivalent to classical Kolmogorov–Sinai entropy. Finally our definitions of quantum entropy are compared with those of Connes and Stϕrmer, and Emch.

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