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Distribution of ratio of consecutive level spacings in interacting boson model and shell model SOFIA KARAMPAGIA, JESSE SPITLER, Grand Valley State University, VLADIMIR ZELEVINSKY, National Superconducting Cyclotron Laboratory — The nearest-neighbor spacing distribution in random matrix theory (RMT) ensembles has long been used for the study of quantum chaos in many-body systems. Recently, a novel measure of quantum chaos was introduced, the distribution of ratio of consecutive level spacings and expressions of this distribution were derived for the integrable case (Poisson) and the RMT ensembles (GOE, GUE, GSE). An advantage of the distribution of ratio of consecutive level spacings is that the usual unfolding procedure of the energy spectrum, in order to get an average level spacing equal to one, is no longer required. In this talk we present an expression of a distribution with a single parameter, λ, which takes the Poisson form of the distribution of ratio of consecutive level spacing when $\lambda = 0$ and the RMT ensemble form when $\lambda = 1$. This expression is then applied to specific cases of the Interacting Boson Model and the configuration interaction Shell Model and it is also compared to results obtained using the nearest-neighbor spacing distribution.

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