Quantum Chaos on 2 spin levels[1] DECLAN MULHALL, The University of Scranton — Random interactions with global symmetries exhibit regularities in the ensemble average sense. A model system of N bosons on 2 spin levels having random 2-body collisions is examined. Robust regularities (in the ensemble average sense) arise, including the usual ones including ground state spin distributions peaked at extreme values of angular momentum, signatures of rotational bands, and smooth parabolic yrast lines. A simple random matrix theory analysis shows signatures of quantum chaos in the level spacing distribution and the Δ_3 statistic. There are other interesting features including steps in the yrast lines and strong regularities in the in the pair transfer amplitude, as well as other collective features.

[1]The Office of Research Services at the University of Scranton

Declan Mulhall
The University of Scranton

Date submitted: 21 Jan 2018   Electronic form version 1.4