

Excited state quantum phase transition and chaos in the Dicke model

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In this contribution I am focusing on the study the critical behaviour of excited states quantum phase transition and its relation to order and chaos in the Dicke model. Also, I present the Jaynes-Cumming model which is in somehow the integrable version for the Dicke model and I compare their energy spectrums. I will see that in both models appear an ESQPT. For the Dicke model, the signatures of criticality in excited states are blurred by the onset of quantum chaos. I will conclude that the emergence of quantum chaos is caused by the precursors of the excited state quantum phase transition.