Large deviations for some random matrix models and a conjecture of Lukic

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I will first give a quick history of the use of sum rules in spectral theory focusing on a conjecture of Lukic. I’ll then make propaganda for a method of Gamboa, Nagel and Rouault (http://arxiv.org/abs/1407.1384v1) using large deviations on matrix models to generate positive sum rules. Finally I’ll discuss work in progress by Breuer, Simon and Zeitouni applying this method to OPUC with singularities at finitely many points.

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