We discuss how to study I = 0 quarkonium resonances decaying into pairs of heavy-light mesons using static potentials from lattice QCD. These static potentials can be obtained from a set of correlation functions containing both static and light quarks. As a proof of concept we focus on bottomonium with relative orbital angular momentum L = 0 of the bbbar pair corresponding to JPC = 0−+ and JPC = 1−−. We use static potentials from an existing lattice QCD string breaking study and compute phase shifts and T matrix poles for the lightest heavy-light meson-meson decay channel. We discuss our results in the context of corresponding experimental results, in particular for Υ(10860) and Υ(11020).

Work done with Marco Cardoso, Nuno Cardoso, Marc Wagner

Classical hypothesis testing constitutes the backbone upon which scientific results are produced in most fields, but it is now under attack as a facilitator of the so-called reproducibility crisis. Although classical testing has been paramount to the discovery of the Higgs boson and the "five-sigma" threshold is considered more robust than the two-sigma threshold used in other fields, the approach has intrinsic limitations even in particle physics;
I will review the classical approach, comparing it with the Bayesian one, and delve into a few spectacular examples of "flukes" from particle physics.
Finally I will give a few perspectives in view of the latest debates on the topics of severe testing and causality in statistical inference.

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