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Bayesian and frequentist approaches to discoveries

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I discuss findings from my recent comparison of Bayesian and frequentist approaches to resonance searches (1902.03243). I introduce a counting experiment based on a search for the Higgs boson from which I generate pseudo-data. With that pseudo-data, I contrast the evolution of the p-value and posterior as we accumulate data and directly compare global p-values and the posterior of the background model. I find that in this toy problem p-values are typically smaller than the posterior by one or two orders of magnitude. I discuss the implications of this result for our interpretation of anomalies in resonance searches and searches for new physics in general.

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