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Bayesian and frequentist approaches to discoveries

Wednesday 31 July 2019 18:05 (1 hour)

I discuss findings from my recent comparison of Bayesian and frequentist approaches to discoveries (1902.03243). I introduce a counting experiment in which we are searching for a signal in the presence of a background, 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 relevance of my findings to direct detection experiments and suggest similar studies to check the behavior of our statistical approaches in that context.

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