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ANGLES AND MODEL SELECTION

Abstract: We consider the effect that the angles between two models of conditional independence has on local alternatives. Recent work (Evans, 2018) has noted that distinct models of conditional independence may nonetheless have identical tangent cones at specific points in the parameter space. This has some immediate consequences: in particular, in order to obtain constant power to reject one model in favour of another we need local alternative hypotheses that decrease to the null at a slower rate than the usual parametric $n^{-1/2}$.

In this work we consider what happens when tangent spaces are not identical, but the angles between them are relatively small. The results give us further reason to worry that distinguishing between these models will be very hard in general.

References:

- [1] R.J. Evans (2018) Model selection and local geometry, *arXiv:1801.08364*.