Accurate Approximation for Inference on Vector Parameters

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The theory of higher order approximation is most easily developed for scalar parameters of interest, and for continuous responses. We consider how the derivations can be extended to discrete responses and how this can be combined with directional tests. The goal is to provide higher order approximations for inference in multi-dimensional problems for categorical data. This work is joint with Don Fraser, Anthony Davison and Nicola Sartori.