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Inference for high-dimensional data accounting for model selection variability

Simultaneous model selection and inference is one of the intensively studied areas in theoretical and applied statistics. However, most of the asymptotic and finite sample results established so far in the literature do not take into account model selection variability in inference. In this talk, we describe new methodologies that address this problem. Motivated by this question, we describe new central limit theorems in infinite dimensions and concentration inequalities which rigorously justify the proposed methods. In the process, we solve some challenging open problems in the area of high-dimensional finite sample inference.