

A 23 years journey on the paths of steepest ascent

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Small sample asymptotics has been an important research area in Chris's career. These techniques provide very accurate approximations to the distribution of estimators and test statistics for small sample sizes with relative errors of order n^{-1} . They are based on saddlepoint methods which exploit the paths of steepest descent from the saddlepoint of an appropriate cumulant generating function viewed as a surface.

We highlight the major developments in this area which include many of Chris's contributions. We relate these results to recent developments by presenting a new test statistic for general parametric models which provides robust second-order accurate inference for small sample sizes. Some numerical results for generalized linear models will illustrate its accurate finite sample behavior even in the presence of model misspecifications.