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Tilted Edgeworth expansions for asymptotically normal vectors

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Abstract We obtain the Edgeworth expansion for $P(n^{1/2}(\hat{\theta} - \theta) < x)$ and its derivatives, and the *tilted Edgeworth* (or *saddlepoint* or *small sample*) expansion for $P(\hat{\theta} < x)$ and its derivatives where $\hat{\theta}$ is any vector estimate having the standard cumulant expansions in powers of n^{-1}.

Keywords Cornish and Fisher · Cumulants · Distribution · Edgeworth · Expansions · Lagrange inversion · Tilted Edgeworth