

# Generalized Neyman–Pearson optimality of empirical likelihood for testing parameter hypotheses

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**Abstract** This paper studies the Generalized Neyman–Pearson (GNP) optimality of empirical likelihood-based tests for parameter hypotheses. The GNP optimality focuses on the large deviation errors of tests, i.e., the convergence rates of the type I and II error probabilities under fixed alternatives. We derive (i) the GNP optimality of the empirical likelihood criterion (ELC) test against all alternatives, and (ii) a necessary and a sufficient condition for the GNP optimality of the empirical likelihood ratio (ELR) test against each alternative.

**Keywords** Empirical likelihood · Generalized Neyman–Pearson optimality