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On the power of some sequential multiple testing procedures

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Abstract
We study an online multiple testing problem where the hypotheses arrive sequentially in a stream. The test statistics are independent and assumed to have the same distribution under their respective null hypotheses. We investigate two recently proposed procedures LORD and LOND, which are proved to control the FDR in an online manner. In some (static) model, we show that LORD is optimal in some asymptotic sense, in particular as powerful as the (static) Benjamini–Hochberg procedure to first asymptotic order. We also quantify the performance of LOND. Some numerical experiments complement our theory.

Keywords Online multiple testing · False discovery rate (FDR) control · Asymptotic optimality · False non-discovery rate (FNR) analysis

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