

The two-sample problem for Poisson processes: adaptive tests with a non asymptotic wild bootstrap approach

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Considering two independent Poisson processes, we address the question of testing equality of their respective intensities. We construct multiple testing procedures by the aggregation of single tests whose testing statistics come from model selection, thresholding and/or kernel estimation methods. The corresponding critical values are computed from a nonasymptotic wild bootstrap approach. The obtained tests are proved to be exactly of level α , and to satisfy non asymptotic oracle type inequalities. From these oracle type inequalities, we deduce that our tests are adaptive in the minimax sense over a large variety of classes of alternatives: classical and weak Besov bodies in the univariate case, but also Sobolev and anisotropic Nikolskii-Besov balls in the multivariate case. A simulation study furthermore shows that they strongly perform in practice.

This is a joint work with M. Fromont (Rennes) and Beatrice Laurent (Toulouse)