

OPTIMAL CHANGE-POINT ESTIMATION FROM INDIRECT OBSERVATIONS

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The problem of change-point estimation in the white noise convolution model will be discussed. In this model, convolution of an unknown function having discontinuity jump is observed with Gaussian white noise, and the problem is to estimate the change-point location. Considering two classes of functions that are smooth apart from a discontinuity jump, we develop optimal in the minimax sense estimators. The results demonstrate that the best achievable rates of convergence are determined both by smoothness of the function away from the change-point and by the degree of ill-posedness of the convolution operator. Optimality is obtained by introducing a new technique that involves as a key element detection of zero crossings of an estimate of the properly smoothed second derivative of the underlying function.

¹Based on the joint work with A. Tsybakov and A. Zeevi.