

DETECTING SINGULARITIES OF PIECEWISE SMOOTH FUNCTIONS

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Problems defined on spaces of piecewise smooth functions are known to be difficult as nonadaptive algorithms that work well for globally smooth functions usually fail. Such problems are even more difficult when information is in addition corrupted by noise. Then fundamental questions are what is the acceptable noise level that allows to solve a problem within given error, and what algorithms should be used? In this talk we consider the problem of detecting singular points of piecewise Hölder functions based on noisy function evaluations. The noise is assumed to be bounded. This problem is important since for many other problems like function approximation or integration one has to localize the singular points in the first place. We also provide a numerical illustration.

Joint work with Leszek Plaskota (University of Warsaw, Poland).