

Integration method for piecewise smooth functions.

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In this work we propose to approximate the integral of a piecewise smooth function with high accuracy by combining a multiscale technique, based on Harten's Multiresolution Analysis, with an underlying numerical integration procedure. The choice of a non-linear, shape-preserving, stable prediction operator minimizes the number of function evaluations and results in a robust method, that could be used in Uncertainty Quantification.

Keywords: Uncertainty quantification, Integration Methods, Harten's Multiresolution.

Acknowledgments. Supported by the research project MTM2014-54388 (Ministry of Economy and Competitiveness, MINECO, Spain) and the FPU14/02216 grant (Ministry of Education and Culture and Sports, MECD, Spain).

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