

Discrete Total Variation with Finite Elements

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The total-variation (TV) seminorm is ubiquitous as a regularizing functional in image analysis, inverse problems and also optimal control applications. We propose and analyze a discrete analogue of the TV-seminorm for functions belonging to a space of globally discontinuous or continuous (possibly higher order) finite element functions on a geometrically conforming mesh. We show that our discrete TV functional admits a convenient dual representation close to the continuous formulation, which is the basis of many popular solution algorithms.

References:

[1] <http://arxiv.org/abs/1804.07477>

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