

Consistency Estimates for Meshless Finite Difference Methods and Selection of Sets of Influence

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Abstract: I will present consistency error estimates for meshless generalized finite difference methods relying on polynomial and kernel-based numerical differentiation (Davydov & Schaback, *Numer. Math.*, 132 (2016), 243–269; arxiv:1611.05001; arXiv:1611.04750) and their applications. It will be demonstrated how quantities arising in these error bounds can be used to facilitate the automatic selection of local sets of influence (stencil supports) needed in particular in the context of solving elliptic PDEs on adaptively refined sets of centers (Davydov & Dang, *J. Comput. Phys.*, 230 (2011), 287–304; Dang, Davydov & Phu, *Appl. Math. Comput.*, 313 (2017), 474–497).

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