SUPERCONVERGENCE IN MESHFREE METHODS

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Superconvergence is an important feature of the classical finite element method (FEM). This feature allows superconvergent recovery of certain quantities of interest, e.g., accurate approximation of derivatives of the solution of the underlying boundary value problem. Meshless methods also exhibit superconvergence, and we will show this through a superconvergence result in H1. Thus meshless methods will allow efficient superconvergent recovery of quantities of interest. Using various numerical examples, we will also show that meshless methods can yield more superconvergence points than the classical FEM, and the distribution of such points in meshless methods can be very different than their counterparts in FEM.