MODELING, APPROXIMATION, AND ANALYSIS OF PARTIAL DIFFERENTIAL EQUATIONS INVOLVING SINGULAR SOURCE TERMS (MS - ID 39)

Regularizations of the Dirac delta distribution, and applications.

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Nilima Nigam Regularizations of the Dirac delta distribution, and applications.' The need to approximate singular sources is widespread in numerical analysis. In this talk, we present a historical overview of, and a framework for constructing approximations of the Dirac delta distribution. As part of this framework we study their convergence in suitable topologies. This in turn allows us to examine the consistency error incurred in their use while numerically solving PDEs. We present numerical experiments in which these ideas are illustrated. This work was inspired by notable previous works on approximation of singular source terms, and is joint with Bamdad Hosseini and John Stockie.