

MS3 Title: Nonlocal Models in PDEs and Applications

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Nonlocal models based on integro-differential equations behave in fundamentally different ways than their fixed PDE-based counterparts, requiring novel analytical and numerical techniques to analyze and utilize them. In part of this minisymposium, we focus on recent advances in nonlocal theories following themes set in the abstract of the keynote address by Qiang Du of Columbia University. Practical applications include modeling simulation (the first two talks) and engineering analysis related to nonlocal theories that have appeared in fracture modeling (peridynamics), nonlocal diffusion, biology, image processing and more.