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Qiang Du* (qdu@math.psu.edu), University Park, PA 16802. *Finite dimensional approximations of nonlocal diffusion and peridynamic models.*

We discuss mathematical and computational issues related to some nonlocal diffusion and peridynamic models. We address questions concerning finite dimensional approximations of such nonlocal models, such as convergence, a priori and a posteriori error analysis and conditioning of nonlocal stiffness matrices. This is a joint work with Kun Zhou, Max Gunzburger, Rich Lehoucq, Li Tian, Lili Ju and Xuying Zhao (Received September 21, 2011)