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Marta D’Elia, Cynthia Flores, Xingjie Li, Petronela Radu* (pradu@unl.edu) and **Yue Yu**. *Nonlocal operators: properties and decompositions.*

The emergence of nonlocal theories as promising models in different areas of science (continuum mechanics, biology, image processing) has led the mathematical community to conduct varied investigations of systems of integro-differential equations and the underlying operators. In this talk I will discuss properties of nonlocal operators, counterparts of local versions, and present some recent results on Helmholtz-Hodge type decompositions of nonlocal operators. Applications of these results will be discussed, as well as connections with other theories. (Received September 16, 2019)