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**Peter J Olver\*** (olver@umn.edu), School of Mathematics, University of Minnesota, Minneapolis, MN 55455. *Symmetry groupoids and weighted signatures of geometric objects.*

In this talk, I will refine the concept of the symmetry group of a geometric object through its symmetry groupoid, which incorporates both global and local symmetries in a common framework. The symmetry groupoid is related to the weighted differential invariant signature of a submanifold, that is introduced to capture its fine grain equivalence and symmetry properties. The groupoid/signature approach will be connected recent developments in signature-based recognition and symmetry detection of objects in digital images. (Received September 05, 2016)