

1096-VM-751 **Matthew L. Wright*** (mlwright@ima.umn.edu). *Hadwiger's Theorem for Functions.*

How can we measure the size of a function? The Lebesgue integral provides a notion of the size of a function, as does the lesser-known Euler integral. Yet there are other notions of function size, in particular, integrals with respect to the intrinsic volumes. The classic Hadwiger Theorem states that any Euclidean-invariant convex-continuous valuation on sets is a linear combinations of the intrinsic volumes. I will lift this result from sets to functions over sets, providing a classification of all valuations on functions, with suitable assumptions about Euclidean-invariance and continuity. Integrals with respect to the intrinsic volumes form a basis for all such valuations, from the topological (the Euler integral) to the geometric (Lebesgue) and everything in between. (Received September 09, 2013)