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**Monika Ludwig\*** (mludwig@poly.edu). *SL(n) invariant notions of surface area.*

For smooth convex sets in  $\mathbb{R}^n$ , there are two classical  $SL(n)$  invariant notions of surface area: equi-affine surface area and centro-affine surface area. In important recent papers by Leichtweiß, Lutwak, Schütt and Werner, these definitions have been extended to general convex sets.

Using valuations on convex sets, equi-affine surface area and centro-affine surface area can be characterized by their transformation properties. Moreover, a much richer family of affine surface areas can be obtained. We describe these characterization theorems (joint work with Matthias Reitzner) and discuss applications of affine surface areas. (Received August 18, 2008)