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Erwin Lutwak and **Deane Yang*** (dyang@poly.edu), Six Metrotech Center, Brooklyn, NY 11201, and **Gaoyong Zhang**. *Affine integral geometry from a differentiable viewpoint*. Preliminary report.

We introduce the notion of an affine contour integral and show how it can be used to define all known affine integral invariants (also known as valuations) of a smooth strictly convex body. We then recall recent work of Monika Ludwig and her collaborators, which shows that this construction does indeed produce all possible affine integral invariants of the convex body. Recent work on sharp inequalities satisfied by these invariants are also recalled. Finally, we will indicate connections to sharp functional and information theoretic inequalities. (Received August 18, 2008)