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Mark A Pinsky* (pinsky@math.northwestern.edu), Mathematics Department, 2033 Sheridan Road, Evanston, IL 60208-2730. *Mean value theorems on Riemannian manifolds.*

On any Riemannian manifold one can define three canonical operators on smooth functions on a geodesic ball: the geometric mean value, the tangent pullback mean value and the stochastic mean value. In the case of a metric of constant sectional curvature, all three of these coincide. But for a general metric all three are different, especially in the limit of small spheres.

The method of proof involves an asymptotic expansion of the Laplace operator of the manifold, and can be applied to many other problems involving the Brownian motion in small spheres. (Received November 05, 2006)