

1056-51-1041 **Benjamin Schmidt*** (schmidt@math.msu.edu), A207 Wells Hall, East Lansing, MI 48824, and
Keith Burns. *On the singularities of the exponential map.*

Let p be a point in a complete Riemannian manifold M and let $\exp_p : T_p M \rightarrow M$ denote the exponential map. Between 1932 and 1965, papers of Littauer-Morse, Savage, and Warner established that a nonzero vector $v \in T_p M$ is a singular point of \exp_p if and only if \exp_p fails to be locally injective at the vector v . In recent joint work with Keith Burns, we show that local injectivity fails in radial directions. I'll discuss this work and an application that characterizes constant curvature projective spaces. (Received September 20, 2009)