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**Christopher D Sogge\*** (sogge@jhu.edu), Department of Mathematics, Johns Hopkins University, Baltimore, MD 21218. *Focal points and sup-norms of eigenfunctions.*

If  $(M, g)$  is a compact real analytic Riemannian manifold, we give a necessary and sufficient condition for there to be a sequence of quasimodes saturating sup-norm estimates. The condition is that there exists a self-focal point  $x_0 \in M$  for the geodesic flow at which the associated Perron-Frobenius operator  $U : L^2(S_{x_0}^* M) \rightarrow L^2(S_{x_0}^* M)$  has a nontrivial invariant function. The proof is based on von Neumann's ergodic theorem and stationary phase. This is joint work with Steve Zelditch. (Received February 09, 2014)