Dear Members of the Selection Committee for the William Chauvenet Postdoctoral Lecturer in Mathematics Postdoctoral Position at Washington University in St. Louis,

I am currently a PhD student in Mathematics at the University of Wisconsin-Madison, and expect to graduate in the coming spring. My Research Interests lie primarily in harmonic analysis, spectral geometry, geometric measure theory, and the study of nonlinear wave equations. My thesis problem focuses on studying spectral multipliers on compact manifolds using methods of Fourier integral operators, which I am working on under the supervision of Professor Andreas Seeger.

If awarded your postdoctoral position, I hope to work with Professor Alan Chang. My PhD research has raised several questions closely tied to Professor Chang's work; his work on Nikodym sets for spheres relates closely to the incidence geometry of annuli which occurs in my work on endpoint estimates for multiplier operators on the sphere, and his insight would be hugely beneficial in my plan to use fractal weighted estimates to improve current best known results on characterizations of L^p bounded Fourier multiplier operators; in my Research Statement, I detail a plan to prove decoupling inequalities for random Cantor sets, and Professor Chang's work on decoupling-type inequalities for Cantor sets with good ellipsephic properties is one of the few positive results in the field. Collaborating with Professor Chang would therefore greatly enhance my future research prospects.

Thank you for your consideration,

Jacob Denson