

Dear Members of the Selection Committee for the J. L. Doob Research Assistant Professorship in Mathematics at the University of Illinois Urbana-Champaign,

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 the J.L. Doob Professorship, your postdoctoral position, I hope to work with Professor Xiaochun Li. His work on Bochner Riesz and cone multipliers is closely related to the work I have planned to extend endpoint estimates for the L^p boundedness of radial Fourier multiplier operators and multiplier on the sphere, and his insight would be hugely beneficial if we were to collaborate on such problems; in my Research Statement, I detail a plan to prove decoupling inequalities for random Cantor sets, and Professor Li's insights into decoupling inequalities would also be highly valuable. I am also beginning to study problems about nonlinear dispersive partial differential equations, and so being in the same department as Professor M. Burak Erdoğan and Professor Nikolaos Tzirakis would be a huge boon to beginning to work on problems in this field. More information about the prospective research alluded to here can be found in my research statement.

Thank you for your consideration,

Jacob Denson