

August 2, 2019
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Dept. of Mathematics, Statistics, and Computer Science
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Dear Committee Members,

I am writing to apply for a mathematics professorship at Macalester College. I am a graduate student at Stanford University and my advisor is Professor Gunnar Carlsson. I expect to receive my PhD in June 2013.

Your listing on MathJobs grabbed my attention because you mentioned computational topology. I am interested in applied and computational topology, and in particular, applications to sensor networks and to data analysis. My dissertation research is on evasion paths in mobile sensor networks. This problem is relevant for real-world sensor networks, and it also motivates a more theoretical question that I study via the J. F. Adams spectral sequence.

Applied and computational topology is an attractive field for undergraduate research projects, and in fact in my undergraduate thesis I studied an image processing data set using a tool called persistent homology. This undergraduate project helped me learn topology, since I saw how abstract concepts such as functoriality play a key role in the more concrete setting of data analysis. I have since coauthored a tutorial on javaPlex, a software package for computing persistent homology, which is used not only by scientists from a wide range of disciplines but also by undergraduate researchers.

I am a committed and experienced teacher, and I have served as a teaching assistant mentor both for my department and for Stanford's Center for Teaching and Learning. In addition, this summer I was the Math Instructor for the Stanford Summer Engineering Academy, whose goal is to attract a diverse student body to science and engineering majors. I taught a course on calculus and a course on linear algebra to a diverse group of 50 incoming Stanford freshman.

I will be present at the Joint Mathematical Meetings in January. I would be happy to answer further questions, and my website is: <http://www.stanford.edu/~henrya/>.

Thank you for your consideration.

Sincerely,

Henry Adams