

Project Summary

Training the Research Workforce in Geometry, Topology and Dynamics

This proposal calls for a research training program in geometry, topology and dynamics at the University of Michigan. Recent Ph.D.'s and advanced graduate students will be the main beneficiaries. We will deepen and broaden their training and give the trainees ample opportunities to excel in their research. Five senior faculty members (Mario Bonk, Richard Canary, John Erik Fornaess, Juha Heinonen and Ralf Spatzier) will lead this project in collaboration with eleven other senior faculty in these areas at Michigan.

Intellectual Merit: Topology, geometry and dynamical systems are core areas in mathematics. Especially in recent years, they have developed in mutually beneficial interaction. Many of the most exciting developments in these areas are truly interrelated, and benefit from each other either by idea, analogy or actual tool. At the same time, connections with other fields such as algebraic geometry and mathematical physics have strengthened dramatically. These developments have been amazing in their breadth and depth, and demonstrate the vitality of these areas. Completely new areas have arisen in the last two decades.

Broader Impact: The Mathematics Department at the University of Michigan has one of the largest and most vigorous post-doctoral and graduate programs in the country. It has an excellent record of producing high-quality researchers in geometry, topology and dynamics. This proposal calls to bolster the training of post-docs and graduate students in geometry, topology and dynamics by deepening and broadening it. In particular, we propose the following specific innovations in our training:

- Overhaul our seminars by introducing Intensive, Exploratory and Conjecture seminars.
- Introducing a new Explorations in Geometry, Topology and Dynamics Seminar.
- Hold workshops specifically geared at young researchers.
- Present numerous opportunities for advanced graduate students and post-docs to develop their lecturing skills.
- Provide for travel semesters to other prominent research places.
- Mentor graduate students and post-docs on their research, teaching and careers.
- Offer undergraduates intensive research experiences in the three areas.