

DEPARTMENT OF MATHEMATICS

# VIGRE Funding Report

(due 30 days after semester of support)

Semester/Summer and Year:

Summer 2008

Name: Casey Warmbrand

List the graduate courses you have taken this semester (including independent studies), your grades, and the instructors:

Course	Title	Grade	Instructor

List the title, date and location of any talks you have given, either here or elsewhere:

---

If you are working on your dissertation, include a one paragraph description of your research progress. If you have not yet begun dissertation research, describe your progress toward finding a dissertation topic and advisor and beginning that research.

---

I am currently researching modifications of the Aztec diamond and domino tilings of such modified regions. I am specifically interested in the asymptotic behavior of the arctic boundary of such regions. I am writing up a comprehensive paper based on the work of Kurt Johansson regarding the arctic boundary of a standard Aztec diamond, this paper will also include some of my own work regarding a modified region similar to a complete Aztec diamond. This new work is what will comprise my thesis.

Dear VIGRE Committee,

During the summer semester of 2008 I received VIGRE support. My plan was to continue my research with Dr. McLaughlin on Random Tilings and their properties in Asymptotic limits. I had intended to complete the writing and preparation for my oral comprehensive exam during the summer and be ready to pass the exam in late August or early September. Unfortunately during the summer, I hit a number of stumbling blocks in my research, and did not get as far as I would have liked. However, I am now working through these issues with the help of my advisor. As such, I have still yet to complete the writing of my comprehensive paper. It is however currently in progress and nearing completion. I am targeting October 18th, about two weeks from now, to be finished. It is worth mentioning that my comprehensive paper will not only consist of a summary of existing work, but also contain some new results of my own, which will then become a part of my thesis.

I have since passed through those stumbling blocks, and am currently working vigorously to finish my preparations for this oral examination. I am including a current draft of my work, along with this report. I plan to hold my oral examination on Thursday, November 20th.

As for the vertical integration component of the grant, I am attending a workshop at the Banff International Research Station from October 5th through October 12th, on Random Matrices, Inverse Spectral Methods and Asymptotics. Since there were no opportunities for high school workshops over the summer, which is what I really wanted to do in terms of vertical integration, I have committed myself to working at two of these during the Fall semester of 2008.

My apologies for the delay in returning this report. Sincerely, Casey Warmbrand

List publications, if any.

Check all activities you completed during the funded period:

Academics:

- Independent Study
- Oral Comprehensive Exam
- Commence Thesis Research
- Conference attendance
- Conference participation
- Complete PhD

Professional development and outreach:

- AP Calculus Visit
- High School Workshops
- Undergraduate Research Project
- Undergraduate Research Seminar
- Super TA
- Mentoring junior graduate students for the qualifying exams
- RTG (help organize)
- Research Seminar (help organize)

Other (please specify)

Attach a brief statement about your academic progress and professional development during the period of support.