

VIGRE PROGRESS REPORT - SPRING, 2000

GUADALUPE I. LOZANO

Progress towards dissertation research

The core of my work towards my dissertation took the form of an independent study with my advisor, Nick Ercolani. The focus of the study was on understanding the symplectic geometry of Euclidean polygons as studied by J. Millson and M. Kapovich, and on learning some of the relevant mathematical background to continue studying related papers in the summer (as detailed in my VIGRE summer proposal).

Courses taken and grades

Math 537B - Global Differential Geometry - Grade: A

TTE 524 - Curriculum Issues and Practices: Mathematics - Grade: A

Math 599 - Independent Study (under Nick Ercolani) - Grade: S

Talks given

"SURFACES, LATTICES AND METRICS: SOME EXAMPLES" - Recruiting Workshop, March 7, 2000

"SYMPLECTIC STRUCTURE OF EUCLIDEAN POLYGONS, PART I" - Graduate Geometry Seminar, April 24, 2000

"TAKE THAT, EUCLID! - EXPLORATIONS IN HYPERBOLIC GEOMETRY" - First Annual Math Awareness Week Student Mathematics Conference, April 25, 2000

"SYMPLECTIC STRUCTURE OF EUCLIDEAN POLYGONS, PART II" - Graduate Geometry Seminar, May 1, 2000

"VISUAL HYPERBOLIC GEOMETRY - THE AXIOMATIC APPROACH" - Graduate Student Colloquium, May 3, 2000 (together with Jeff Selden)

Other

At the beginning of the Spring 2000 semester I was invited to participate in the mathematics education RTG (research tutorial group) as a mentor-type person for first-year participants. I attended weekly meetings throughout the Spring semester and contributed with an informal presentation of some of my education-related projects ('Dynamic software and interactive web-based tools for calculus instruction at the college level,' and 'Thinking straight on curved space, a unit on non-Euclidean geometries') at the end of the semester.

In March of 2000, I participated in the Southern Arizona Regional Science and Engineering Fair (SARSEF) as a judge for sixth grade math, computer science and engineering projects.

During the month of April 2000, I put together an interactive web-based exploration for the first Math Awareness Week student conference. This interactive exploration sought to introduce high school and college entry-level students to the basics of hyperbolic geometry. A related talk was then presented by Jeff Selden and I in the last Graduate Student Colloquium of the Spring 2000 semester, mainly with the goal of raising awareness among teachers, T.A.'s and undergraduates about the existence of powerful internet-based software programs on non-Euclidean geometries. In the same line of work, I have just recently finished designing a web-based teaching unit introducing the basics of spherical and hyperbolic

geometries. The unit incorporates animated web graphics and Java applications, and may develop into a future conference presentation.

Towards the end of the Fall semester, 2000 I participated in the organizational committee for the second annual 'Mathematics Graduate Day' (MGD), an in-house mini-conference where graduate students from both the mathematics and applied mathematics programs present research projects/interests.