

**PROCEEDINGS**  
**of the**  
**Research Experiences for Undergraduates**  
**Program in Mathematics**

**Oregon State University**  
**Summer 1995**

**Dennis J. Garity, Director**

This volume contains the Proceedings of the Research Experiences for Undergraduates Program held at the Mathematics department of Oregon State University during the summer of 1995. This program was funded by the National Science Foundation and by Oregon State University. The funding from Oregon State University was provided by the Provost's Office, the Research Office, The College of Engineering, The College of Science, and the Mathematics Department. Dennis J. Garity of the Mathematics Department directed the program. Robert Burton of the Mathematics Department, Paul Cull of the Computer Science Department, and Adel Faridani of the Mathematics Department were additional faculty advisors on the research projects undertaken by the student participants. There were ten undergraduate participants in the program. The papers summarizing the research projects are listed below.

The participants were:

Mande Butler .....	Eastern Washington University
Jeanne Carton .....	Villanova University
Todd Coffey .....	Oregon State University
Susan Garner Garille .....	Lafayette College
Matthew Hall .....	Oregon State University
Kristy Hyman .....	Lake Superior State University
Emil Kraft.....	Eastern Washington University
Ingrid Nelson.....	The College of William and Mary
Brian Stein .....	University of Michigan
Shasta Willson .....	University of Oregon

### Table of Contents

Mande Butler, Jeanne Carton, and Emil Kraft - (Advisor: Dennis Garity)	
<i>Geodesics with Three Intersections on the Punctured Torus</i> .....	1
Susan Garner Garille - (Advisor: Dennis Garity)	
<i>A Mathematica Program for Classifying Geodesics with <math>k</math> Self Intersections on the Once Punctured Torus</i> .....	33
Matthew Hall - (Advisor: Adel Faridani)	
<i>Fan Beam Tomography</i> .....	49
Kristy Hyman and Todd Coffey - (Advisor: Robert Burton)	
<i>Explorations in Fractal Percolation</i> .....	63
Ingrid Nelson - (Advisor: Paul Cull)	
<i>Coding Theory on the Towers of Hanoi</i> .....	106
Brian Stein - (Advisor: Paul Cull)	
<i>Two Independent Hamiltonian Circuits and Embedding Mesh of Trees on the Möbius Cube</i> .....	126
Shasta Willson - (Advisor: Paul Cull)	
<i>Explorations into Global Stability of Population Models</i> .....	144