Topics in Topology, Kleinian Groups
Math 145 Pitzer College Fall 2007

Time and Place: MWF 10, Broad Hall 207
Instructor: Professor Jim Hoste, F210, x73258, jhoste@pitzer.edu
Office Hours: M 3:30-4:30, T 1:30-2:30, F 1-2, and by appointment.
Texts: Indra's Pearls, The Vision of Felix Klein by Mumford, Series, and Wright.

The goal of this course is to read through the book Indra's Pearls. This is a beautiful book that explains the vision of Felix Klein, that geometries should be understood by looking at the underlying group of isometries. We will be learning about Kleinian groups, which are discrete subgroups o Mobius transformation. This material lies at the intersection of algebra (group theory and linear algebra), geometry, topology, dynamical systems, and for us, computer programming. The topic of computer programming is present because we will be drawing beautiful pictures of the limit sets of Kleinian groups using Mathematica.

It may be too ambitious to complete the entire book, but we will make it through a significant portion.

The book is written for a wide audience and does not even assume the reader knows what a group is. However, already having had algebra will be helpful. No real knowledge of topology or programming will be assumed.

Grades in the course will be based entirely on homework assignments and in-class presentations.