Undergraduate Math Club
Fall 2007
2nd floor Nesbitt Common Room
September 20, 4:10-5:00pm
(free pizza and pop, as always)

When points want to smash together but we don't let them…

Professor Renzo Cavalieri

Abstract

In this talk we will explore a few ideas about moduli spaces (i.e., spaces X whose points naturally parameterize geometrical objects such as circles in the plane, lines in 3-space, etc.). This means two things: (i) there is a (natural) bijection between the points of X and the objects we wish to study, (ii) "close" points parameterize "similar" objects.
Our toy example will be the space of configurations of n points on the sphere. We will explicitly investigate and describe this space, and then see that it has unpleasant properties: full of holes, rips, and tears! To patch the situation (literally!) we are confronted with a fundamental problem in moduli space theory, namely how to meaningfully enlarge the class of objects being parameterized so as to obtain a more beautiful (and useful!) moduli space.