

Discrete Mathematics Seminar

Time: Friday, 27 March 2015, 2:00-3:00 PM
Room: 237 Derrick Hall
Title: Based Loop Spaces and the Associative Law
Speaker: Dr. Micah Miller, Mathematics Department

Abstract:

Given a topological space X and two loops in X with a common basepoint, we define their product by concatenating the loops. This product does not satisfy the associative law strictly, but does satisfy it up to homotopy. Moreover, the space of based loops of X is homotopy equivalent to a topological space that has a strictly associative multiplication. This is to say that spaces with strictly associative multiplications are not proper topological objects. The question is then what is the proper topological notion that describes the based loop space with its product. This leads us to the notion of a strongly homotopy associative space.

In this talk, we give the definition of a strongly homotopy associative space, using the based loop space of X as a motivating example. We use this notion to give a description of the chains of the based path space of X in terms of X and its based loop space.