

**Nancy Hingston**

College of New Jersey

will speak on

**Loop products and closed geodesics**

ABSTRACT: The critical points of the energy function on the free loop space  $L(M)$  of a compact Riemannian manifold  $M$  are the closed geodesics on  $M$ . Filtration by the length function gives a link between the geometry of closed geodesics and the algebraic structure given by the Chas–Sullivan product on the homology of  $L(M)$ . Geometry reveals the existence of a related product on the cohomology of  $L(M)$ . For manifolds such as spheres and projective spaces for which there is a metric with all geodesics closed, the resulting homology and cohomology rings are nontrivial, and closely linked to the geometry. This will be an expository lecture; in particular I will not assume any knowledge of the Chas–Sullivan product. Joint work with Mark Goresky.

MONDAY, 10 NOVEMBER 2008

LECTURE AT 4:00 PM

COFFEE, TEA, AND REFRESHMENTS FROM 3-5 PM

ROOM 617, WACHMAN BUILDING  
DEPARTMENT OF MATHEMATICS