1077-57-357 **Moira Chas***, moira@math.sunysb.edu, and **Steven Lalley**, **Keren Li** and **Bangrui Chen**.

Statistics about curves on surfaces.

Consider the set of free homotopy classes of oriented closed curves on a surface. This is the set of equivalence classes of maps from the circle into the surface, where two such maps are equivalent if the corresponding directed curves can be continuously deformed one into the other. There is a canonical bijection from this set to the set of conjugacy classes of the fundamental group of the surface.

Fix now a hyperbolic metric and a set of generators of the fundamental group of the surface. Each free homotopy class determines three numbers: the geometric length (the length of the geodesic in the class), the word length (the smallest number of generators needed for a description of the class), and the self-intersection (the minimum number of times, counted with multiplicity, a curve in the class intersects itself.)

We will discuss statistics about and relations between these three numbers associated to a free homotopy class.

Parts of this work are joint with Bangrui Chen, Steve Lalley, Keren Li and Anthony Phillips. (Received August 25, 2011)