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Hyperbolic geometry and surface bundles.

A surface bundle is completely determined by the associated monodromy from the fundamental group of the base to the mapping class group of the fiber. Therefore, we stand to gain much geometric information about surface bundles by studying the geometric properties of the mapping class group of a surface.

In this lecture we will discuss geometric aspects of the mapping class group and describe a fascinating connection between the coarse geometry of a surface bundle and the geometry of actions of the mapping class group. This will begin with some preliminary discussion of some of the canonical spaces on which the mapping class group acts, after which we will explain the connection between coarse hyperbolicity of surface bundles and the notion of convex cocompactness for subgroups of the mapping class group as defined by Farb and Mosher. We end with a discussion of some of the open questions and partial results. (Received September 18, 2013)