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Ralph L Cohen* (ralph@math.stanford.edu), Dept. of Mathematics, Stanford University, Stanford, CA 94305. *Stability of surface mapping spaces and the homology of mapping class groups*. Preliminary report.

Let $\Sigma_{g,n}$ be an oriented surface of genus g with n -boundary components, and let $Diff(\Sigma_{g,n}, \partial)$ be the group of orientation preserving diffeomorphisms that preserve the boundary pointwise. Let X be a simply connected space. I will describe joint work with I. Madsen whose goal is to understand the limiting homotopy type, as g get large, of the homotopy orbit space of the mapping space $Map(\Sigma_{g,n}; X)$ by the obvious action of $Diff(\Sigma_g, \partial)$. The goal is to prove a parameterized form of the generalized Mumford conjecture as recently proven by Madsen and Weiss. Toward this end I will describe a stability theorem for the homology of these surface spaces that generalize the Harer-Ivanov stability theorems for mapping class groups. (Received September 15, 2005)