1153-52-410 **Jonah Gaster*** (gaster@uwm.edu), **Brice Loustau** and **Léonard Monsaingeon**. *Discrete harmonic maps from hyperbolic surfaces.*

Combined work of Eels-Sampson and Hartman asserts the existence of a harmonic diffeomomorphism in any homotopy class of maps between a pair of homeomorphic compact hyperbolic surfaces. I will discuss the background theory, present a suitable discretization, and locate discrete harmonic maps by applying a constant step gradient descent method, where convergence is guaranteed by explicit computations in the hyperbolic plane. In particular, we show that the discrete energy functional is strongly convex, a uniform statement not implied by the existing literature. Time permitting, I will discuss a computer implementation that exploits the above viewpoint, and the delicate problem of convergence of the discrete maps to the smooth harmonic map. This is joint with Brice Loustau and Leéonard Monsaingeon. (Received September 02, 2019)