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Jonah Gaster*, jbgaster@gmail.com, and **Brice Loustau**. *Computing discrete equivariant harmonic maps.*

Combined work of Eels-Sampson and Hartman asserts the existence of a harmonic diffeomorphism in any homotopy class of maps between a pair of homeomorphic compact hyperbolic surfaces. After briefly discussing the background, I will present a discretization of the theory, and locate discrete harmonic maps by applying a constant step gradient descent method. Convergence is guaranteed by 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. I will also discuss and present a computer implementation that exploits the above viewpoint. This is joint with Brice Loustau. (Received September 04, 2018)