1023-76-1162 **Steven Benzel*** (`sbenzel@berry.edu`), Berry College, PO Box 5014, Mount Berry, GA 30149-5014. *Symplectic Approximation of Euler Flow on a Riemannian Manifold.* Preliminary report.

We begin by recalling the vorticity formulation for Euler flow on a Riemannian 2-manifold M with boundary. This gives an ODE on the space of (smooth) functions on M. We define a Symplectic Approximation to this ODE to be a finite dimensional hamiltonian system together with a symplectic integration algorithm for the hamiltonian whose flow can be considered as an approximation to the original ODE. As the main example of symplectic approximation we show that given a finite piecewise linear triangulation of M, we can construct a 4-tuple $(\mathfrak{g}, Q, H, \sigma)$, where $\mathfrak{g}$ is a compact Lie algebra, $Q : \mathfrak{g}^\star \to C^0(M)$ is an approximation map, $H : \mathfrak{g}^\star \to \mathbb{R}$ is a quadratic hamiltonian, and A is a symplectic integration algorithm for H. We conclude with animations demonstrating the approximation in action. (Received September 25, 2006)