1135-81-2989 **Barbara A. Sanborn*** (bsanborn@antiochcollege.edu). *Quantum uncertainty, J-holomorphic curves, and symplectic capacity.*

This talk extends the geometric theory of quantum mechanics as a Hamiltonian dynamical system to include aspects of the symplectic topology of an almost complex quantum phase space by identifying the Robertson-Schrödinger uncertainty relation as the differential version of the energy identity in the theory of J-holomorphic curves. We consider a family of maps from a Riemann surface into the quantum phase space by using the vector fields generated by two quantum observables, and show that the metric tensor pulls back by such a map to the covariance tensor for the two observables. The uncertainty relation is represented as an equality that compares the map energy differential to the sum of the pull-back of the symplectic form and an anti-holomorphic term. If a J-holomorphic map of this form can be globally defined on a compact Riemann surface, its image is a minimal surface and the uncertainty product integral is a topological invariant that depends only on the homology class of the curve modulo its boundary. This result generates questions about the relation between the concepts of quantum information capacity and symplectic capacity. (Received September 26, 2017)