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J-holomorphic maps and the uncertainty principle in geometric quantum mechanics BARBARA SANBORN, Antioch College — The theory of geometric quantum mechanics describes a quantum system as a Hamiltonian dynamical system, with a complex projective Hilbert space as its phase space. The Kähler structure of the projective space provides quantum mechanics with a Riemannian metric in addition to the symplectic structure characteristic of classical mechanics. By including aspects of the symplectic topology of the quantum phase space, the geometric theory is extended and enriched. In particular, the quantum uncertainty principle is naturally expressed as an inequality from J-holomorphic map theory.

Barbara Sanborn
Antioch College

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