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08854. *Equivariant Gromov-Witten theory: quantum Martin formula and quantum Kirwan map.*

Givental's equivariant version of Gromov-Witten theory counts stable maps to the target equivariantly. A more sophisticated version of equivariant Gromov-Witten theory tries to count stable maps to the homotopy quotient. A symplectic version of the resulting theory goes by the name of "symplectic vortices", and depends on a choice of volume form on the domain. The zero-volume limit has been studied by Gaio-Salamon and Ziltener, and involves the moduli space of stable maps to the quotient of the target. I will describe some results on the behavior of the resulting invariants in genus zero as the volume is rescaled, in particular, to infinity, which involves the quotient of the moduli space of stable maps. As a result, we get a formula expressing the vortex invariants in terms of Givental's invariants, and a proof of a version of the "quantum Martin formula" of Bertram, Ciocan-Fontantine, and Kim, for any positive volume form. I will describe why we believe the original conjecture (which concerns the zero-volume limit) needs to be modified to take into account the "quantum Kirwan map" under development by Ziltener. (Received July 31, 2007)