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Robert J. Buckingham* (robbiejb@umich.edu), Department of Mathematics, 2074 East Hall, 530 Church St., Ann Arbor, MI 48109, and **Peter D. Miller**. *A Model Problem for the Semiclassical Sine-Gordon Equation*.

The semiclassical sine-Gordon equation models the zero-dispersion limit of magnetic flux propagation in Josephson junctions. The solution for a model problem with topological charge one is computed analytically for a sequence of arbitrarily small dispersion values. This result is analogous to the N-soliton solution for the nonlinear Schrodinger equation. Numerical results reveal a primary caustic where the genus of the solution changes. We also discuss current progress on extending results to general initial data that is monotonically increasing with topological charge one. This is joint work with Peter Miller. (Received January 24, 2007)