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Self duality equations for Ginzburg-Landau and Seiberg-Witten type functionals with 6th order potentials. (English) [Zbl 0994.58009](#)

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Summary: The abelian Chern-Simons-Higgs model of Hong-Kim-Pac and Jackiw-Weinberg leads to a Ginzburg-Landau type functional with a 6th order potential on a compact Riemann surface. We derive the existence of two solutions with different asymptotic behavior as the coupling parameter tends to 0, for any number of prescribed vortices. We also introduce a Seiberg-Witten type functional with a 6th order potential and again show the existence of two asymptotically different solutions on a compact Kähler surface. The analysis is based on maximum principle arguments and applies to a general class of scalar equations.

MSC:

58E30 Variational principles in infinite-dimensional spaces

35J60 Nonlinear elliptic equations

53C99 Global differential geometry

Cited in **15** Documents

Keywords:

Chern-Simons-Higgs model; Ginzburg-Landau type functional; 6th order potential; compact Riemann surface; Seiberg-Witten type functional; compact Kähler surface

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