

# STABLE SOLUTIONS TO THE ABELIAN YANG–MILLS–HIGGS EQUATION ON $S^2$ AND $T^2$

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ABSTRACT. The abelian Yang-Mills-Higgs (YMH) equation is a second-order variational equation defined on Hermitian line bundles over Riemannian manifolds, and is known to be closely related to minimal submanifolds in codimension two. When the base manifold is compact Kähler, the abelian YMH equation admits stable solutions given by a system of first-order equations. Motivated by analogous results for minimal submanifolds, we ask whether the first-order equations account for all stable solutions of the abelian YMH equation when the base is  $\mathbb{C}\mathbb{P}^n$ . In this talk we show that, under mild assumptions, the answer is affirmative in the basic case  $n = 1$ , by adapting the ideas of Lawson-Simons. The method also yields a similar result for  $T^2$ .