

## Entire solutions of the magnetic Ginzburg-Landau equations in $\mathbb{R}^4$

YONG LIU, XI-NAN MA, JUNCHENG WEI AND WANGZHE WU

**Abstract.** We construct entire solutions of the magnetic Ginzburg-Landau equations in dimension 4 using the Lyapunov-Schmidt reduction. The zero sets of these solutions are close to the minimal submanifolds studied by Arezzo and Pacard. We also show the existence of a saddle-type solution, whose zero set consists of two vertical planes in  $\mathbb{R}^4$ . As  $\epsilon$  tends to zero, these two types of solutions are believed to be stable with respect to the corresponding energy functional and to lie in the same connected component of the moduli space of entire solutions.

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