## Solutions of the Allen-Cahn equation which are invariant under screw-motion

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We study entire solutions of the Allen-Cahn equation which are defined in the 3-dimensional Euclidean space and which are invariant under screw-motion. In particular, we discuss the existence and non existence of nontrivial solutions whose nodal set is a helicoid of ? 3. © 2012 Springer-Verlag.