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Symmetric vortices of two-component Ginzburg-Landau system

We consider symmetric vortex solutions in the plane $\mathbb{R}^2$, $\Psi = (\psi_+(x), \psi_-(x)) = (f_+(r)e^{in_+\theta}, f_-(r)e^{in_-\theta})$, with given degrees $n_\pm \in \mathbb{Z}$, and prove existence, uniqueness, and asymptotic behavior of solutions as $r \to \infty$. We also consider the monotonicity properties of solutions, and exhibit parameter ranges in which both vortex profiles f_+, f_- are monotone, as well as parameter regimes where one component is non-monotone. The qualitative results are obtained by means of a sub- and supersolution construction and a comparison theorem for elliptic systems. This is joint work with S. Alama.