Monotonicity and rigidity of solutions to some elliptic systems with uniform limits

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In this talk we present some results regarding sharp a priori bounds, Liouville-type theorems, monotonicity and 1-dimensional symmetry for solutions of the coupled competing Gross-Pitaevskii system

$$(P) \qquad \begin{cases} -\Delta u = u - u^3 - \Lambda u v^2 & \text{in} \quad \mathbb{R}^N \\ -\Delta v = v - v^3 - \Lambda u^2 v & \text{in} \quad \mathbb{R}^N \\ \quad u, v \geq 0 & \text{in} \quad \mathbb{R}^N, \end{cases} \qquad \text{with } \Lambda > 0.$$

The talk is based on a joint work with Alberto Farina and Berardino Sciunzi.