

An upper bound for the least energy of a sign-changing solution to a zero mass problem

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In this talk we present some recent results on an upper bound for the least energy of a sign-changing solution to the the nonlinear scalar field equation

$$-\Delta u = f(u), \quad u \in D^{1,2}(\mathbb{R}^N),$$

where $N \geq 5$ and the nonlinearity f is subcritical at infinity and supercritical near the origin. More precisely, we establish the existence of a nonradial sign-changing solution whose energy is smaller than $12c_0$ if $N = 5, 6$ and smaller than $10c_0$ if $N \geq 7$, where c_0 is the ground state energy. Work in collaboration with Mónica Clapp and Benedetta Pellacci.

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