Quasilinear elliptic problems under asymptotically linear conditions at infinity and at the origin

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(about a work with Marcelo F. Furtado and Edcarlos D. Silva)

We obtain existence of a solution for the quasilinear Schrödinger equation

$$-\Delta u + V(x)u - \Delta(u^2)u = g(x,u), x \in \mathbb{R}^n,$$

where V is a positive potential and the nonlinearity $g(x,t)$ behaves like t at the origin and like t^3 at infinity. In the proof, we apply a changing of variables besides variational methods. The solution belongs to $W^{1,2}(\mathbb{R}^n)$.