Existence and multiplicity of nontrivial solutions for quasilinear elliptic equations

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Abstract. In this paper we prove the existence and multiplicity of nontrivial weak solutions for quasilinear elliptic equations of the form $-L_p u + V(x)|u|^{p-2}u = h(u)$ in $\mathbb{R}^N$, where $L_p u \doteq \epsilon^p \Delta_p u + \epsilon^p \Delta_p(u^2)u$ and V is a positive continuous potential bounded away from zero verifying some conditions and the nonlinear term $h(u)$ has a subcritical growth type. By using minimax methods, the existence of nontrivial solution in $C^{1,\alpha}_{loc}(\mathbb{R}^N)$ is established as well as its decay to zero at infinity when $1 < p < N$. Joint work with Claudianor Alves and Uberlandio Severo.