
An Asymptotically Periodic Schrödinger Equation with Indefinite Linear Part

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We consider the Schrödinger equation $-\Delta u + V(x)u = f(x, u)$, where V is periodic and f asymptotically periodic in the x -variables, 0 is in a spectral gap of $-\Delta + V$ and f is either asymptotically linear or superlinear as $|u| \rightarrow \infty$. We show that this equation has a solution $u \in H^1(\mathbb{R}^N)$, $u \neq 0$.

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