Analysis Seminar

Existence of Solution for a Class of Asymptotically periodic fourth-order Schrödinger equations

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Abstract. It is established existence of solution for a class of fourth-order elliptic problem defined in the whole space $\mathbb{R}^N$. The work is devoted to study a class of potentials and nonlinearities which can be periodic or asymptotically periodic. Here we consider a general fourth-order elliptic problem where the principal part is given by $\alpha \Delta^2 u + \beta \Delta u + V(x)u$ where $\alpha > 0, \beta \in \mathbb{R}$ and $V : \mathbb{R}^N \to \mathbb{R}$ is a continuous potential. Hence our main contribution is to consider general fourth-order elliptic problems taking into account the cases β negative, zero or positive. In order do that we employ some fine estimates proving the compactness for the associated energy functional.

References

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