Spectral Properties of a Polyharmonic Operator with Limit-Periodic Potential in Dimension Two

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We consider an operator $Hu = (-\Delta)^l u + V(x)u$ in $L_2(\mathbb{R}^2)$, where l > 5 and V(x) is a series of periodic potentials with doubling periods. We discuss the following results: the spectrum of the operator contains a semiaxis and in the high energy region there is an extensive class of generalized eigenfunctions which are close to plane waves. In the proof we use perturbative methods developed for periodic potentials and basic ideas of the KAM method. (joint work with Yulia Karpeshina)