Mathematics > Differential Geometry

On the finiteness of the Morse Index for Schrödinger operators

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Let H=$\Delta +V$ be a Schr\"odinger on a complete non-compact manifold. It is known since the work of Fischer-Colbrie and Schoen that the finiteness of the negative spectrum of H implies the existence of a function ϕ solution of $H\phi=0$ outside a compact set. This has consequences for minimal surfaces and for the finiteness of spaces of harmonic sections in the Bochner method. Here we show that the converse statement also holds: if there exists ϕ solution of $H\phi=0$ outside a compact set, then H has a finite number of negative eigenvalues.

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