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Formulas of Szegő type for the periodic Schrödinger operator

We prove asymptotic formulas of Szegő type for the periodic Schrödinger operator $H = -\frac{d^2}{dx^2} + V$ in dimension one. Admitting fairly general functions h with $h(0) = 0$, we study the trace of the operator $h(\chi_{(-\alpha,\alpha)} E_{(-\infty,\mu)}(H) \chi_{(-\alpha,\alpha)})$, as $\alpha \to \infty$, where $\chi_{(-\alpha,\alpha)}$ is the indicator of the interval $(-\alpha, \alpha)$ and $E_{(-\infty,\mu)}(H)$ is the spectral projection of H for the interval $(-\infty, \mu)$.