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11. Mathematical Physics

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Stable absolutely and singularly continuous spectra due to integral conditions

Let A, B be selfadjoint operators in $L^2(\mathbf{R}^n)$ such that their associated semigroups e^{-tA}, e^{-tB} are integral operators. Denote by $D = e^{-A} - e^{-B}$, the difference of the semigroups at $t = 1$, with the kernel $D(\ldots)$ mapping $\mathbf{R}^n \times \mathbf{R}^n$ to $\mathbf{R}$. Then the absolutely continuous spectra of A and B coincide if $\int\limits_{\mathbf{R}^n} \int\limits_{\mathbf{R}^n} |D(x,y)| dx dy < \infty$. Moreover, if A is the Laplacian the singularly continuous spectrum of B is also empty if $\sup\limits_{|x| \geq 1} |x|^\alpha \int\limits_{\mathbf{R}^n} |D(x,y)| dy < \infty$ with $\alpha > 1$. The results are obtained in collaboration with S. Eder (Clausthal) and K. B. Sinha (New Delhi).