



MAFIA - the seminar you can't refuse

Schrödinger operator with a complex steplike potential

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ČVUT v Praze

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in T212

Fakulta jaderná a fyzikálně inženýrská ČVUT
Trojanova 13, 12000 Praha

Abstract: We will discuss the spectrum and the resolvent of a very simple model

$$\mathcal{L} = -\frac{d^2}{dx^2} + V(x), \quad V(x) := \begin{cases} V_+ & \text{for } x \geq 0, \\ V_- & \text{for } x < 0, \end{cases} \quad \text{with } V_+, V_- \in \mathbb{C},$$

and its perturbation by a complex point interaction

$$\mathcal{L}_\alpha = -\frac{d^2}{dx^2} + V(x) + \alpha\delta_0, \quad \alpha \in \mathbb{C},$$

where δ_0 is the Dirac delta function. We provide sharp estimates for the norm of the resolvents for both \mathcal{L} and \mathcal{L}_α . Their corresponding optimal pseudomodes are also constructed explicitly.