



MAFIA - the seminar you can't refuse

Self-adjointness and spectral properties of Dirac operators with electrostatic and Lorentz scalar δ -shell interactions supported on curves in \mathbb{R}^2

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Abstract: This talk is devoted to Dirac operators coupled with electrostatic and Lorentz scalar δ -shell interactions of constant strength supported on a curve $\Gamma \subset \mathbb{R}^2$. First, results about the self-adjointness and the spectral properties in the case that Γ is a closed compact smooth curve are reviewed. Then, similar results are discussed, when Γ is a compact perturbation of a straight line. In all cases it turns out that there is a critical combination of interaction strengths for which the spectral properties differ and for which there is a lack of smoothness in the operator domain.

This talk is based on a joint work with J. Behrndt, K. Pankrashkin, and T. Ourmières-Bonafos.