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Essential Self-Adjointness of Dirac operators under the influence of general-relativistic gravity

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Physical reasoning give expressions for the Hamiltonian of a system. These Hamiltonians are differential operators that are mostly symmetric in a densely defined domain.

However, to study the dynamics of the unitary group corresponding to a Hamiltonian, it is required that the Hamiltonian be self-adjoint or essentially self-adjoint. I will present our study on how the static non-linear electromagnetic-vacuum space-time of a point nucleus affects the self-adjointness of the general- relativistic Dirac Hamiltonian for a test electron.

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