

A STRATEGY FOR SELF-ADJOINTNESS OF DIRAC OPERATORS: APPLICATIONS TO THE MIT BAG MODEL AND δ -SHELL INTERACTIONS

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Abstract: We develop an approach to prove self-adjointness of Dirac operators with boundary or transmission conditions at a C^2 -compact surface without boundary. To do so we are lead to study the layer potential induced by the Dirac system as well as to define traces in a weak sense for functions in the appropriate Sobolev space. Finally, we introduce Calderón projectors associated with the problem and illustrate the method in two special cases: the well-known MIT bag model and an electrostatic δ -shell interaction.

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