

Rough and Partial Data Problem for Systems - Case of the Pauli-Dirac Equation

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Abstract

In this talk we will discuss the recovery of the coefficients of the Pauli-Dirac system. The original work was done by Nakamura and Tsuchida where they recovered the magnetic field and the electric potential assuming that these quantities are smooth functions. Recently Salo and I used Carleman estimate techniques to improve the regularity assumption to only $C^{0,1}$ coefficients. The idea is similar to that of the scalar magnetic Schrodinger equation except that in the case of systems the non-commuting matrices pose a challenge. With this Carleman estimate we will also attempt to complete a partial data result similar to that of work by Bukgheim and Uhlmann for the Schrodinger equation. Again, in this case the non-commuting matrices present some difficulties. We will discuss how one overcomes these difficulties and prove a special case of the partial data problem.

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