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Rémi Mokdad: Scattering of Dirac Fields in the Interior of Black Holes.

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Lately, more and more of the attention of the mathematical GR communities is being given to the cosmic censorship conjecture (CCC). In this context, there have been recently some studies focusing in particular on energy estimates and scattering theories in the interior of black holes. In this talk, I will discuss the results of two works on the scattering of Dirac fields in the interior of spherically symmetric charged black holes that are Reissner-Nördstrom-like, namely, the scattering between the outer event horizon and the inner Cauchy horizon. In the first paper, we show asymptotic completeness for the massive charged Dirac equation in the aforementioned interior region of a sub-extremal ((Anti-) De Sitter) Reissner-Nordström black hole. This is done by first decomposing the Dirac equation using the Newman-Penrose formalism and obtaining analytic scattering in a dynamical framework via the wave operators. The analytical results are then re-interpreted geometrically to define the trace operators. In the second paper the conformal scattering theory for the same settings is constructed and we obtain the geometrical results by directly solving the characteristic Cauchy problem using what I refer to as the 'waves re-interpretation' method