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## The scattering problem for Vlasov-Poisson

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The Vlasov-Poisson system is a kinetic model for a continuous density of particles interacting through either Newtonian or Coulombic gravitation. I will describe the scattering problem for this equation, where one must find the asymptotic dynamic as time goes to infinity, and then connect the asymptotic behavior of the solution at time minus infinity to time plus infinity through the so-called scattering map. This model exhibits "modified" scattering, where the asymptotic dynamic is given by the linearized equation, plus an explicit nonlinear correction. To solve the scattering problem, we apply the pseudo-conformal transformation, more widely used in the study of the nonlinear Schrodinger equation. This transformation, which inverts time, allows us to reformulate the scattering problem as a Cauchy problem, which we then solve using Picard iteration. This talk is based on joint work with Benoit Pausader, Zhimeng Ouyang, and Klaus Widmayer.