Estimates and approximations to the non-linear Boltzmann equation

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We explore further the structure of the Boltzmann integral to revisit the derivation of L^p estimates and gain of integrability. These estimates depend strongly on the rate of collisions and the integrabiltity properties of the angular cross section.

We show how these estimates have an impact in new results for the analysis and approximation by spectral methods to the Boltzmann transport equation, as they are shown to be a powerful tool in the propagation of regularity for the solution to the BTE as well as estimates for the convergence of spectral-constrained approximating method to this solution.

These are series of work in collaboration with Ricardo Alonso, Jeff Haack and Harsha Tharskabushanam.