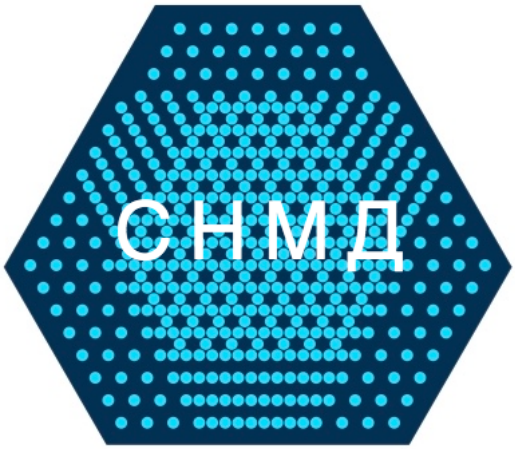

Српско научно математичко друштво

Kongres mladih matematičara u Novom Sadu

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Novi Sad, Srbija

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Kinetic monatomic gas mixture models: on the Cauchy problem and L^p theory for the system of Boltzmann equations

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The lecture will focus on the analysis of kinetic systems for mixtures of monatomic gases with different masses. This corresponds to a Boltzmann system for the evolution of vector valued distribution function. The collision or interaction law, as much as the modelling of the transition probability rates for pairwise interactions, are crucial components in the dynamics.

We will present some recent rigorous properties developed for the multi-component monatomic gas system described by coupled Boltzmann equations corresponding to the dynamics of elastic mixing of particles characterized by their identical shapes (spheres) but different masses.

These results are obtained in collaboration with Irene M. Gamba and Erica De La Canal.

Anti-Gaussian quadrature rule for trigonometric polynomials

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We investigate an anti-Gaussian quadrature rule with maximal trigonometric degree of exactness with respect to an even weight function on $[-\pi, \pi)$. Its error is equal in magnitude but of opposite sign to corresponding Gaussian formula. We give the method for its construction based on relations between nodes and weights of the quadrature rule for trigonometric polynomials and those of the quadrature rule for algebraic polynomials which were given in [1]. Also, we introduce averaged Gaussian quadrature formula for trigonometric polynomials and, at the end, we give some numerical examples.

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