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中国科学院数学与系统科学研究院
Academy of Mathematics and Systems Science
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Academy of Mathematics and Systems Science, CAS
Colloquia & Seminars

Speaker: Chaojiang Xu, 南京航空航天大学

Inviter: Nguyen Quoc Hung

Title: Analytic smoothing effect of a class of ultra-parabolic equations

Language: Chinese

Time & Venue: 2023.11.24 09:00-10:00 思源楼S813

Abstract:

We study a class of ultra-parabolic equations, it is a high order degenerate parabolic operators of Hormander type, so it is strongly degenerate, but we prove that this class operators possesses the analytic smoothing effect of Cauchy problem, that means, for the initial datum belongs to L^2 , we prove that the solution is analytic for all spatial variables when $t>0$. This class operators contains many kinetic operators such as, Kolmogorov-Fokker-Planck operators, Landau operators and non-cutoff Boltzmann operators.

To overcome the degeneracy in the spatial variable, a family of well-chosen vector fields with time-dependent coefficients will play a crucial role, and the analytic regularization effect of weak solutions relies on a quantitative estimate on directional derivatives in these vector fields.

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