

SPEAKER:

Tuoc Van Phan, University of Tennessee

TITLE:

On existence and regularity estimates for solutions to a class of linear parabolic equations with degenerate coefficients

ABSTRACT:

We discuss a class of linear parabolic equations in the upper half space in which the leading matrix coefficients behave as x_d^α , where α is in $(0, 2)$ and x_d is the vertical direction spatial variable. One of the motivations to study this class of equations comes from the study for a class of degenerate viscous Hamilton-Jacobi equations. Under some weighted VMO condition on the coefficients, existence and uniqueness of solutions in suitable weighted Sobolev spaces are proved for equations in both divergence and non-divergence form. Some ideas and techniques in the proof will be represented. Discussion on related results, and open questions are also addressed. The talk is based on the joint works with Hongjie Dong (Brown University) and Hung Vinh Tran (University of Wisconsin - Madison).