Texas Tech University. Applied Mathematics Seminar.

On lemma of growth for parabolic equations of second order and applications

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ABSTRACT. In this talk I will present some results related to the Cauchy problem for parabolic equations in non-divergence form. This type of equations serves as a model for different stochastic processes. In particular, Einstein, in his pioneering work in 1905, proved that the Brownian motion can be effectively modeled using parabolic equations in non-divergence form. It is well-known that if coefficients of a non-divergence parabolic equation are not Lipchitz, then one cannot reduce it to a self-adjoint equation. For this reason it is difficult to apply the techniques based on energy estimates machinery to study qualitative properties of the solution. In the talk I will give review of the alternative techniques based on the so-called lemma of growth. They will then be applied to investigate stability of the Cauchy problem for parabolic equations with degeneracy at the infinity.