

1052-35-256

Karen Yagdjian* (yagdjian@utpa.edu), Department of Mathematics, University of Texas-Pan American, 1201 W. University Drive, Edinburg, TX 78541-2999. *Fundamental Solutions for Hyperbolic Operators with Variable Coefficients.*

The goal of this talk is to give a survey of a new approach in the construction of fundamental solutions for the partial differential operators with variable coefficients and of some recent results obtained by that approach. More precisely, the integral transformation is suggested that transforms the family of the fundamental solutions of the Cauchy problem for the operator with the constant coefficients to the fundamental solutions for the operators with variable coefficients. The kernel of that transformation contains the Gauss's hypergeometric function. This approach was applied by the author and his coauthors, T.Kinoshita (University of Tsukuba) and A.Galstyan (University of Texas-Pan American), to investigate in the unified way several equations such as the linear and semilinear Tricomi and Tricomi-type equations, Gellerstedt equation, the wave equation in Einstein-de Sitter spacetime, the wave and the Klein-Gordon equations in the de Sitter and anti-de Sitter spacetimes. In particular, for all above mentioned equations, we have obtained among other results, the representation formulas for the initial-value problem, the $L_p - L_q$ -estimates, local and global solutions for the semilinear equations, blow up phenomena, self-similar solutions. (Received August 29, 2009)