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Karen Yagdjian* (yagdjian@utpa.edu), Department of Mathematics, University of Texas-Pan American, Edinburg, TX 78539. *Cauchy problem for nonlinear wave equation with variable speed of propagation.*

In the talk we discuss the issue of global existence of the solutions of the Cauchy problem for nonlinear wave equations with variable coefficients. The basic model equations under consideration are wave map type equations and semilinear Tricomi-type equation appearing in several applications to aerodynamics. We derive Strichartz estimates for the linear equations and apply them to semilinear equations to find out some sufficient conditions for existence of the global weak solutions. These conditions tie together nonlinearity with the speed of propagation and with the dimension of the spatial variable. We also prove necessity of these (or close) conditions for the global solvability of the problem. The special attention is devoted to the blowup phenomena caused by the parametric resonance. (Received September 28, 2005)