ICM 1998, Berlin, Aug. 18 – 27

Abstract of Short Communications and Posters

Section:

10. Partial Differential Equations

1991 MS Classification: 34, 35

Mamadaliev, Nasirjan, Tashkent State University, Rep. Uzbekistan

The Problem of Gellerstedt for a secondking equation of the parabolic-hyperbolic type

We consider the equation of fixed type $\alpha = -n + \alpha_0$, $0.5 < \alpha_0 < 0$, $0 < \alpha_0 < 0.5$

$$0 = \left\{ \begin{array}{ll} xu_{xx} + u_{yy} + \alpha u_x & , \; x < 0 \\ u_{xx} - u_y + a(x, y)u & , \; x > 0 \end{array} \right\}. \tag{1}$$

in domain $D = D_0 \bigcup D_1 \bigcup AB$, where $D_0(x < 0)$ is a characteristic triangular and $D_1(x > 0)$ is a rectangular which adjoin to domain D_0 by segment AB of the line $x = 0$. For indicated values of parameter α we found a representation of the general solution class R of system (1) in the domain D_0. For obtaining the representation of the solution we prove some important identities for hypergeometric functions. Using the solution of system (1) in domain do existency and uniqueness theorem for Gellerstedt problem is proved.