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İSTANBUL DIFFERENTIAL EQUATIONS MEETINGS

Comparison of solutions of nonlocal wave equations

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Abstract

I will talk about some recent results concerning the comparison of solutions of two di§erent equations. There are many works in literature on such comparisons investigating how solutions of a model equation approximate those of a parent equation. In the scope of áuid dynamics, typical model equations are CamassaHolm type equations. These are derived from a parent equation, typically the Euler equations, the Boussinesq system, or a similar system. With H. A. Erbay and S. Erbay we have considered the same question within the scope of nonlocal elasticity. Our parent equation is the Improved Boussinesq or a general nonlocal equation representing bidirectional wave propagation, while the model equations are again Camassa-Holm type unidirectional equations. In that respect I will concentrate on three types of results that we have obtained:

1. Derivation of the unidirectional equations from the model equation.

2. Estimates between solutions of unidirectional (CH type) equations and nonlocal wave equations.

3. Estimates between solutions of two nonlocal wave equations.

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