

Inverse Problems Network Meeting 3

Thursday, 26th April 2018 - Friday, 27th April 2018

Centre for Inverse Problems, UCL

Abstract of Talk

NONLINEAR RESPONSES FROM THE INTERACTION OF TWO PROGRESSING WAVES AT AN INTERFACE AND ASSOCIATED INVERSE PROBLEM

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For scalar semilinear wave equations, we analyze the interaction of two (distorted) plane waves at an interface between media of different nonlinear properties. We establish that new waves are generated from the nonlinear interactions. Furthermore, we show that the incident waves and the nonlinear responses determine the location of the interface and some information of the nonlinear properties of the media. In particular, for the case of a jump discontinuity at the interface, we can determine the magnitude of the jump in the nonlinear parameter. We will briefly indicate the generalization to nonlinear elastodynamics with the nonlinear interaction of two progressing polarized waves.

Joint research with Gunther Uhlmann and Yiran Wang.