ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

11. Mathematical Physics

1991 MS Classification: 35J50, 35J55, 35P25, 47A40, 73B30, 73D30
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Direct and inverse problems of fluid-structure interaction

Three-dimensional problems of interaction between elastic and acoustic fields are investigated. An elastic field is defined in an inhomogeneous anisotropic body occupying a bounded domain $\overline{\Omega}_1$, while the acoustic field is defined in the exterior domain $\overline{\Omega}_2 = R^3 \setminus \overline{\Omega}_1$ which is filled also by an anisotropic inviscid fluid medium. These fields satisfy the governing equations of steady oscillations together with special type kinematic and dynamic transmission conditions on the interface. The direct problems are studied by the boundary integral equation and functional-variational methods. For general *Lipschitz domains* we prove existence and uniqueness theorems. These results are employed to investigate the corresponding inverse scattering problems.