ΣΕΜΙΝΑΡΙΟ

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ΘΕΜΑ: **NEW DEVELOPMENTS IN TIME-HARMONIC ELECTROMAGNETIC INVERSE OBSTACLE SCATTERING**

ΤΟΠΟΣ: Αίθουσα Σεμιναρίων ΙΤΕ/ΕΙΧΗΜΥΘ

ΗΜΕΡΟΜΗΝΙΑ: Δευτέρα, 4 Οκτωβρίου 2004

ΩΡΑ: 19:00

ΠΕΡΙΛΗΨΗ

For the approximate solution of the inverse obstacle scattering problem to reconstruct the boundary of an impenetrable obstacle from the knowledge of the far field pattern for the scattering of time-harmonic electromagnetic waves within the last decade a number of new reconstruction algorithms has been developed, analyzed and implemented. Roughly speaking one can distinguish three groups of methods. **Decomposition methods**, in principle, separate the inverse problem into an ill-posed linear problem to re-construct the scattered wave from its far field pattern and the subsequent determination of the boundary of the scatterer from the boundary condition. **Iteration methods** interpret the inverse obstacle scattering problem as a nonlinear ill-posed operator equation and apply iterative schemes such as regularized Newton methods or Landweber methods for its solution. Finally, the third group consists of the more recently developed **sampling and probe methods**. In principle, these methods are based on criteria in terms of the solvability of ill-posed linear integral equations of the first kind to decide whether a point lies inside or outside the scatterer. The talk will give a survey by describing one or two representatives of each group including a discussion on the various advantages and disadvantages.