**ICM 1998, Berlin, Aug. 18–27**

**Abstracts of Short Communications and Posters**

**Section:**

# 15. Numerical Analysis and Scientific Computing

1991 MS Classification: 35, 45, 65

Kangro, Urve, Tartu University, Estonia; Nicolaides, Roy, Carnegie Mellon University, USA

## Spectral Convergence of the Interior Source Method with Point Matching

We consider the interior source method for solving the two dimensional exterior Helmholtz equation, where the approximate solution is represented as a linear combination of the fundamental solutions with singularities on some curve inside the body. The coefficients of the linear combination are determined by matching the solution at a set of points on the boundary to a given boundary value. We show that for analytic boundaries it is possible to choose the interior curve so that the convergence on the boundary (and outside the body) is exponential in the number of variables. The factors affecting the convergence rate are discussed.