

The Robin problem for the scalar Oseen equation

Dagmar Medková

Mathematical Institute, Czech Academy of Sciences, Czech Republic

medkova@math.cas.cz

We study the Robin problem for the scalar Oseen equation

$$-\Delta u + 2\lambda\partial_1 u = 0 \quad \text{in } \Omega \subset R^3,$$

with prescribed boundary condition

$$\frac{\partial u}{\partial n} + hu = g \quad \text{on } \partial\Omega,$$

where h denotes a positive function, and the Robin problem with the boundary condition

$$\frac{\partial u}{\partial n} - \lambda n_1 u + hu = g \quad \text{on } \partial\Omega$$

with $h \geq 0$. We prove unique solvability of these problems, a representation of the solution in form of a scalar Oseen single layer potential, and the maximum principle for the solution of the Robin problem for the scalar Oseen equation.

References

- [1] *D. Medková, E. Skopin, W. Varnhorn*: The Robin problem for the scalar Oseen equation. *Mathematical Methods in the Applied Sciences*, to appear.