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http://www.math.uni-goettingen.de/schulz/

9. Exercise in Mathematics and Scientific Computing for Inverse Problems

(Inverse acoustic obstacle scattering, pointsource method)

1. Problem (10 points)

(pointsource method)
Consider the situation of problem 1 from exercise 8. Use the matlab function for the direct problem to get u^∞ and then write a new matlab function for the inverse problem of reconstructing u^s from known u^∞ and known boundary conditions on ∂D (sound soft). With the reconstructed u^s the boundary can be found by locating the minimum curve (but we do not do this numericly by now, assume *a priori* knowledge of location and size of domain). Choose an (big enough) circle as domain of approximation and use 4 different orientations for the domain of approximation. Regard the step which must be regularized!

Sum of Points: 10