Boundary element methods for exterior boundary control problems

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In this presentation we discuss boundary control problems subject to second order partial differential equations in unbounded exterior domains. Examples are given by the Laplace and the Helmholtz equations.

Since the control is considered in $H^{1/2}$ (Γ) the regularisation is realised by the exterior Steklov-Poincaré operator.

To be able to deal with unbounded domains, boundary integral equations are used.

For the numerical approximation we consider a symmetric Galerkin boundary element method and we apply a semi-smooth Newton method in the case of box constraints.

Numerical examples are given at the end of the talk.