

Applied Analysis Seminar

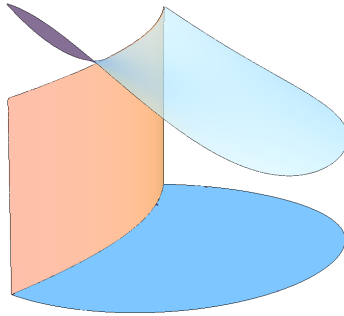
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Institut für Angewandte Mathematik
Mathematikon

Optimal regularity for the thin obstacle problem with $C^{0,\alpha}$ coefficients

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The thin obstacle problem concerns the minimizer of the classical Dirichlet energy

$$\int_{\Omega} |\nabla u|^2 dx,$$

under the constraint that u is larger or equal to a given function ϕ on a hypersurface \mathcal{M} in Ω . Main problems of interest are the (optimal) regularity of the minimizer, and the regularity of the free boundary $\partial\{x \in \mathcal{M} : u(x) > \phi(x)\}$.

In this talk, I am going to discuss the thin obstacle problem under the low regularity assumptions on the manifold \mathcal{M} and the obstacle ϕ , namely, \mathcal{M} and ϕ are assumed to be $C^{1,\alpha}$. We show the optimal regularity of the minimizer and the $C^{1,\beta}$ regularity of the free boundary around the regular free boundary points. To achieve this we use a linearization method and an epiperimetric inequality. This is joint work with Angkana Rüland.