

Sonderforschungsbereich 1060

The Mathematics of Emergent Effects

Einladung zu einem Vortrag im SFB-Seminar

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spricht zum Thema

Boundary effects, boundary layer potentials and the polyharmonic Dirichlet problem

Zeit: Dienstag, den 16. Juli 2013, 16.15 Uhr

Ort: Lipschitz-Saal 1.016, Endenicher Allee 60

Kaffee/Tee: 16.00 Uhr im Plücker-Raum 1.015

gez. Michael Griebel

Abstract: The presence of a boundary poses a number of challenges to kernel approximation. One well-understood challenge for kernel approximation with surface splines comes via a basic saturation result: on bounded domains, the highest attainable rate of approximation is roughly half of the highest rate for the analogous boundary-free setting. A related problem is that for many standard function classes, precise rates of approximation have been unknown for surface spline approximation.

For fairly general domains in R^d (compact with smooth boundaries), we present an approximation scheme for surface spline approximation that delivers precise L_p ($1 \leq p \leq \infty$) approximation orders for well known smoothness spaces. Furthermore, for sets of centers having extra density near the boundary (violating a key assumption of the saturation result) the increased free-space convergence rates can be achieved. Connections between this scheme and boundary layer potential solutions of polyharmonic Dirichlet problems will be discussed.