Philipps Universität Marburg

Oberseminar zur Numerik im WiSe 2016/17

Im Rahmen des Oberseminars der AG Numerik wird

Herr Dr. **Markus Weimar**, Department Mathematik, Universität Siegen,

am Mittwoch, den **09. November 2016**, zum Thema

Bounds on optimal regularity indices

vortragen.

Abstract. We are concerned with interrelations of regularity indices $\overline{s}$ and $\overline{\alpha}$ of subsets $S(\Omega) \subset L_p(\Omega)$, where $1 < p < \infty$ and $\Omega \subset \mathbb{R}^d$ is a bounded Lipschitz domain. Here $\overline{s}$ and $\overline{\alpha}$ refer to maximal smoothness parameters w.r.t. the scale of Sobolev spaces $W_p^s(\Omega)$ and the adaptivity scale of Besov spaces $B_{\tau,\tau}^{\alpha}(\Omega)$, $1/\tau = \alpha/d + 1/p$, respectively, which in turn determine the order of approximation that can be achieved by uniform (linear) or adaptive (non-linear) numerical methods. We show that non-trivial a priori knowledge of the form $S(\Omega) \subset A_{p_z,q_z}^z(\Omega)$, i.e., membership in some Besov/Triebel-Lizorkin space, can be used to deduce *upper bounds* for $\overline{\alpha}$ in terms of $\overline{s}$, z, and p_z. This fairly generic result is applied to the set of solutions $S(\Omega)$ of the inhomogeneous stationary Stokes problem on arbitrary Lipschitz domains, as well as to the p-Poisson problem on polyhedral Lipschitz domains.
The talk is based on joint work in progress together with Dr. P. Cioica-Licht (Otago).

Der Vortrag findet um **16:15 Uhr** im Seminarraum **06D10** am Fachbereich Mathematik und Informatik, Hans-Meerwein Str., Lahnberge, statt.

Es lädt ein die AG Numerik