1145-41-2538   **Barbara Zwicknagl*** (`zwicknagl@math.tu-berlin.de`). *Multiscale function reconstruction based on reproducing kernels.*

In this talk, I shall discuss variational problems arising from function reconstruction. Given function values at scattered discrete locations, one often computes an approximation to the unknown function from a Hilbert space by minimizing a functional which consists of a fidelity term and a regularising term involving the Hilbert space norm. It is well-known that for a large class of such functionals, minimizers lie in a finite dimensional space spanned by translates of the reproducing kernel of the Hilbert space.

Such reproducing kernels often have an intrinsic multiscale structure and they are typically not given in a closed form expression. Hence, to work practically with such multiscale kernels, a careful approximation of the kernel function is required, which does not spoil the good approximation properties. In this talk, I will discuss some quantitative approximation and stability properties of reconstruction processes in generalized Besov spaces based on properly approximated kernel functions.

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