Numerical Analysis and Scientific Computing Seminar

Sparse numerical linear algebra and interpolation spaces

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Abstract: We derive discrete norm representations associated with projections of interpolation spaces onto finite dimensional subspaces. These norms are products of integer and noninteger powers of the Gramian matrices associated with the generating pair of spaces for the interpolation space. We include a brief description of some of the algorithms which allow the efficient computation of matrix powers. We consider in some detail the case of fractional Sobolev spaces both for positive and negative indices together with applications arising in preconditioning techniques. Several other applications are described.

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