

TITLE OF THE TALK: The boundary element
spline collocation for non-uniform meshes on torus

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ABSTRACT:

The spline collocation method for a class of biperiodic strongly elliptic pseudodifferential operators is considered. For discretization a non-uniform mesh is employed. As trial functions tensor products of odd degree splines are used and the collocation is imposed at the nodal points of the tensor product mesh. By the means of the Arnold-Wendland Lemma, the collocation problem is reduced to an equivalent Galerkin problem. Then it is shown that the collocation problem is uniquely solvable if the maximum meshlength is small enough. Moreover, the approximation is stable and quasioptimal with respect to a norm depending on the order of the operator and the degree of approximating splines. Optimal convergence results are given for general and quasiuniform meshes. The results cover for example the single layer and the hypersingular operator. Let us note that Costabel and McLean (1992) obtained optimal convergence results for uniform meshes.