

## **Degree of approximation theorems for approximation with side conditions**

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This thesis is a study of the degree of uniform linear approximation with side conditions.

The side conditions considered fall into four categories, namely: Lagrange interpolatory side conditions imposed on approximation from finite dimensional subspaces of  $C(T)$ , where  $T$  is compact Hausdorff; Hermite-Birkhoff interpolatory side conditions imposed on approximation by algebraic or trigonometric polynomials on finite intervals; the side condition "increasing to the right" imposed on approximation by algebraic polynomials on finite intervals (the results here are applied to rational approximation on  $[0, \infty)$ ); and generalized monotonicity side conditions imposed on approximation by algebraic polynomials on finite intervals.

Jackson type estimates are obtained for the degree of approximation in each case. In addition, for the side conditions of an interpolatory type, best possible asymptotic bounds are found for the ratio of the degree of approximation with side conditions to the degree of unconstrained approximation.

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