ON NUMERICAL METHODS AND THEIR ANALYSIS FOR DIFFERENT KINDS OF INTEGRAL EQUATIONS

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We restrict ourselves to linear integral equations on a finite interval and to methods for their numerical solution based on global ansatz functions like weighted polynomials or Nyström interpolants. In particular, we consider Fredholm and Volterra integral equations with weakly singular kernel functions as well as strongly singular integral equations with fixed and moving singularities. We discuss the applicability of the Nyström method and its analysis in spaces of continuous functions by using the theory of collectively compact operator sequences. Moreover, we give reasons for the necessity to use other spaces and methods of numerical analysis if we switch from weakly singular to strongly singular integral equations.