# On Stability Constants and Condition Numbers of Discretization Methods

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## Abstract

Discretizations lead to systems of algebraic equations of steadily growing size if the accuracy of the approximation is increasing. Inverse stability constants and condition numbers describe the sensitivity of the solution of these equations with respect to perturbations of the data. Starting from an abstract result in this paper the inverse stability constants of finite difference and collocation methods for BVODEs as well as of Ritz-Galerkin methods for elliptic variational problems are shown to converge to those of their continuous counterparts as the discretization becomes finer and finer. For two choices of basis systems the exact asymptotic behavior of the collocation method condition number is given.

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