

# WHERE HAVE ALL THE DIGITS GONE?

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The design of numerical algorithms has to take into account accuracy, speed and reliability. This talk looks at the issue of reliability by investigating the sensitivity and conditioning of spectral methods for solving boundary value problems. We explore the sensitivity of those methods to perturbations or round-off errors. Although the condition numbers of the matrices arising in the computation are often very large, one typically does not observe a comparably large amplification of perturbations. In fact, with zero boundary conditions, there is no amplification.