Analytical Solution of the Hermite Collocation Discretization of a Differential Equation

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Abstract

Although the numerical solution of linear differential equations (DEs) via the Hermite collocation discretization has been widely studied, there have been no results giving analytical formulas of the solution of matrix equations that arise from this discretization until the speaker turned his attention to this area. This talk will present results applied to a simple self-adjoint linear DE, including comparison of the discrete Hermite collocation solution with the corresponding continuous solution. This talk should be accessible to undergraduate mathematics students and features ideas from calculus, differential equations, linear algebra, and (a tiny bit of) complex analysis.