

Rootfinding for Polynomial and Rational Interpolants

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Abstract

Computing the roots of polynomial interpolants can be reduced to finding the eigenvalues of associated companion matrix pencils. For polynomials expressed in barycentric form, a companion matrix pencil can be constructed directly from the values, nodes and barycentric weights defining the interpolant. Rational interpolants can also be represented in barycentric form by defining different barycentric weights, so this same companion matrix pencil can be used to compute the roots and also the poles of these rational interpolants. In this talk we will investigate the use of this companion matrix pencil applied to locating the roots and poles of Floater-Hormann interpolants.

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