Condition and convergence of a barycentric rational interpolant

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We study two properties of a rational interpolant which has been introduced some thirty years ago and is linear in the interpolated function. About its condition we show that it is remarkably well-conditioned, as its Lebesgue constant grows about as slowly as that of polynomial interpolation between Chebyshev nodes, and this with very little dependence on the interpolation nodes. About its convergence we prove that the convergence as the square of the maximal mesh distance conjectured earlier is indeed valid, but merely under some conditions about the location of the nodes. We illustrate our findings with numerical calculations.

Joint work with: Michael S. Floater, University of Oslo, Norway.