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Jean-Paul Berrut* (jean-paul.berrut@unifr.ch), University of Fribourg, Departement de Mathematiques, Chemin du Musee 23, CH 1700 Fribourg, Switzerland. *Linear barycentric rational interpolation with guaranteed degree of exactness.*

In recent years, linear barycentric rational interpolants, introduced in 1988 and improved in 2007 by Floater and Hormann, have turned out to be among the most efficient infinitely smooth interpolants, in particular with equispaced points. In the present contribution, we introduce a new way of obtaining linear barycentric rational interpolants with relatively high orders of convergence. The basic idea is to modify the interpolant with equal weights of 1988 to force it to interpolate exactly the monomials up to a certain degree. This is obtained by modifying a few weights at each extremity of the interval of interpolation. Numerical experience demonstrates that the method is indeed able to interpolate with much higher orders than the original 1988 interpolant, and in a very stable way. (Received September 21, 2017)