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Multivariate homogeneous two-point Padé approximants

J. Abouir and B. Benouahmane

Abstract

Two-point Padé-type approximants and two-point Padé approximants have been studied by several authors in the scalar case. Some definitions in the multivariate case have been introduced. In the current work, we define multivariate homogeneous two-point Padé-type approximants whose generating polynomials exhibit a degree shift. We consider higher-order approximants and introduce multivariate homogeneous two-point Padé approximants. We derive some recurrence relations for generating polynomials. Finally, a numerical example is given to illustrate our results.

Keywords: two-point Padé approximants, multivariate approximants, Laurent series, orthogonality.

MSC: Primary 41A21; Secondary 41A20.

§1. Introduction

Univariate two-point Padé approximants appeared for the first time in some papers of physicists for different applications [4, 13, 21, 22]. They are introduced to have a good approximation of the series both near the origin and at the point of infinity. These approximants were studied by Draux [9, 10], Gonzalez-Vera [11], Jones and Thron [14], McCabe [17, 18] and others. For results on the convergence of sequences of such approximants,

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