

ON THE TWO POINT PADÉ TABLE FOR A DISTRIBUTION

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ABSTRACT. Some additional recurrence relations for the denominator polynomials of two point Padé approximants are derived. An example in which the coefficients of one of the two series, from which the Padé approximants are derived, are moments of a distribution is considered. For this example, properties of the denominator polynomials, and their zeros, are described.

1. Introduction. In this work we first look at some relations between the denominator polynomials of the Padé approximants and two point Padé approximants that are derived from the two series expansions

$$(1) \quad \frac{\mu_0}{z} + \frac{\mu_1}{z^2} + \frac{\mu_2}{z^3} + \cdots + \frac{\mu_k}{z^{k+1}} + \cdots$$

and

$$(2) \quad -\mu_{-1} - \mu_{-2}z - \mu_{-3}z^2 - \cdots - \mu_{-k}z^{k-1} - \cdots,$$

where the μ_k , $k = 0, \pm 1, \pm 2, \dots$, are real numbers. We then look at some properties of the polynomials when the coefficients of the series (1) are the moments of a particular distribution and those of series (2), though chosen in a natural way, are not moments of the distribution.

It is well known that if the coefficients μ_k , $k = 0, \pm 1, \pm 2, \dots$, are such that the Hankel determinants of order n

$$(3) \quad H_n^{(m)} = \begin{vmatrix} \mu_m & \mu_{m+1} & \cdots & \mu_{m+n-1} \\ \mu_{m+1} & \mu_{m+2} & \cdots & \mu_{m+n} \\ \vdots & \vdots & \cdots & \vdots \\ \mu_{m+n-1} & \mu_{m+n} & \cdots & \mu_{m+2n-2} \end{vmatrix}$$

This research is supported by the Brazilian Science Foundation FAPESP under grant 00/07856-8.

Received by the editors on September 30, 2001, and in revised form on April 2, 2002.