



Multipoint Padé approximants as limits of rational functions of best approximation in the complex domain[†]

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Abstract

In this paper we study the behavior of best L^p -approximations by rational functions to an analytic function on union of disks, when the measure of them tends to zero.

Keywords: best approximation, rational functions, Padé approximant, L^p -norm.

MSC: Primary 41A20, 41A21; Secondary 32A10.

§1. Introduction

Let $X = \{z_j\}_{j=1}^k \subset \mathbb{C}$, $k \in \mathbb{N}$, and let B_j be disjoint pairwise open disks centered at z_j and radius $\beta > 0$. We denote $\mathcal{A}(I)$ the space of analytic functions on $I := \cup_{j=1}^k B_j$, which are continuous on \bar{I} . Let $n, m \in \mathbb{N} \cup \{0\}$ and let Π^n be the class of algebraic polynomials with complex coefficients of degree at most n . We consider the set of rational functions

$$\mathcal{R}_m^n = \mathcal{R}_m^n(I) := \left\{ \frac{P}{Q} : P \in \Pi^n, Q \in \Pi^m, Q(z) \neq 0 \text{ for all } z \in I \right\}.$$

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