

Stray, Arne

Decomposition of approximable functions. (English) [Zbl 0568.30035](#)
Ann. Math. (2) 120, 225-235 (1984).

The purpose of this paper is to give a description of the space $A_D(F)$ of functions on a relatively closed subset F of an open plane set D which can be approximated uniformly on F by functions in $H(D)$, i.e. functions analytic on D . The main result is the decomposition

$$A_D(F) = C_{ua}(F \cup \Omega(F)) + H(D).$$

Here $\Omega(F) = D \setminus (F \cup M_F)$, where M_F is the set of all $z \in D \setminus F$ which can be joined to $D^* \setminus D$ by an arc in $D^* \setminus F$ (D^* is the one point compactification of D) and $C_{ua}(F \cup \Omega(F))$ denotes the uniformly continuous functions on $F \cup \Omega(F)$ which are analytic in the interior of $F \cup \Omega(F)$.

Basic ingredients in the proof are Vitushkin's scheme for rational approximation [see e.g. *T. W. Gamelin, Uniform Algebras* (1969; [Zbl 0213.40401](#))], together with Arakelyan's noncompact versions of Mergelyan's classical polynomial approximation theorem [see e.g. *D. Gaier: Vorlesungen über Approximationen im Komplexen* (1980; [Zbl 0442.30038](#))] and earlier related results by the author.

Reviewer: [B.Øksendal](#)

MSC:

[30E10](#) Approximation in the complex plane

Cited in **2** Reviews
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Keywords:

uniform approximation on a relatively closed subset; Vitushkin's scheme for rational approximation

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