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GENERAL INTERPOLATING SEQUENCES IN DISKS AND POLYDISKS

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Let A be a uniform algebra, i.e. a closed subalgebra of the continuous functions on a compact Hausdorf space which separates points, contains constants, and is equipped with the sup norm topology. Let D^n be the (open) unit polydisk in C^n; let $H^\infty(D^n, A)$ be the Banach algebra of bounded, analytic, A-valued functions on D^n equipped with the sup norm (see [3, pp. 224–232] for a description of such functions); and let $l^\infty A$ be the Banach algebra of bounded sequences of elements of A. If $S=\{a_i\}_{i=1}^\infty \in D^n$ is a sequence of points in D^n, we can define a map, $T: H^\infty(D^n, A) \to l^\infty A$ by $T(f)=\{f(a_i)\}_{i=1}^\infty$. We will say S is an interpolating sequence w.r.t. A if T is surjective. If S is an interpolating sequence w.r.t. C we will simply say S is an interpolating sequence, and if S is an interpolating sequence w.r.t. every uniform algebra, we will say S is a general interpolating sequence.

If $S=\{a_i\}_{i=1}^\infty \subset D^n$ is an interpolating sequence, then it is known that S must be uniformly separated, i.e. there exists a constant M and functions $f_1, f_2, \cdots \in H^\infty(D^n)$ such that for all i, $\|f_i\| \leqq M$ and $f_i(a_i)=1$ while f_i is zero on the remaining points of S. (We will use $H^\infty(D^n)$ for $H^\infty(D^n, C)$.) In 1958, L. Carleson [2] showed that for $S \subset D$ $(D=D^1)$, uniform separation is a necessary and sufficient condition that S be an interpolating sequence (w.r.t. C). We will produce a sufficient condition for a sequence to be a general interpolating sequence, and indicate some additional criteria, which, along with uniform separation, guarantees general interpolation.

1. General interpolating, uniformly separated, and α-separated sequences.

If S is an interpolating sequence w.r.t. A, the map $T: H^\infty(D^n, A) \to l^\infty A$

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[1] The results presented in this paper represent part of the author's doctoral dissertation which was written at Harvard University under the direction of Professor Andrew M. Gleason.