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On the Set of Non Normal Points of an Analytic Set

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Introduction. In the present paper we shall consider the set of non normal points in an analytic set and discuss under which condition an analytic set is normal[1][2].

First of all let us recall definitions ([8], p. 260) which are fundamental for our arguments. Let M be an analytic set in a domain D of the space of n complex variables $C^n(z_1, \cdots, z_n)$, i. e., the set which is locally expressible as common zeros of a finite number of holomorphic functions. A function f on M is called *holomorphic*, when the following conditions are satisfied: (1) f is uniquely defined at every regular point of M, (2) for every regular point x of M, f coincides in a neighborhood of x with some holomorphic function in the ambiant space, and (3) for every point x of M, f is bounded in a neighborhood of x. A function is called *holomorphic at a point* x of M when it is holomorphic in a neighborhood on M of x. For a holomorphic function f on M we shall denote by $S_N(f)$ the set of those points of M in any neighborhood on M of which f is not the restriction of a holomorphic function in the ambiant space. By S_N we shall mean the set of those points of M at each of which some holomorphic function in the intersection of M with a neighborhood of this point can not be expressed as restriction of a holomorphic function in the ambiant space. At a point of M not belonging to S_N, M is called *normal* ([3] Exposé XIV, this is called "*la propriété* (H)" in [8]). Similarly for a holomorphic function f on M, we call M *normal with respect to* f at a point of M not belonging to $S_N(f)$ ("*la propriété* (H)" of f in [8]).

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1) The author was inspired to study this subject, when he attended Prof. K. Oka's seminar at Kyoto University.

2) After having prepared this paper, the following two papers appeared quite recently:
W. Thimm: Über Moduln und Ideale von holomorphen Funktionen mehrerer Variablen, Math. Ann., 139 (1959).
W. Thimm: Untersuchungen über das Spurproblem von holomorphen Funktionen auf analytischen Mengen, ibid,
in which the problem treated in this paper and related ones are thoroughly studied; Theorem 3 of the present paper is included as a special case in Satz 9 of the second paper. But it seems to the author of the present paper that his approach to this theorem is different from Thimm's.