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weakly holomorphic

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Let  $V$  be a local complex analytic variety. A function  $f: U \subset V \rightarrow \mathbb{C}$  (where  $U$  is open in  $V$ ) is said to be *weakly holomorphic* through  $U$  if there exists a nowhere dense complex analytic subvariety  $W \subset V$  and  $W$  contains the singular points of  $V$  and  $V \setminus W \subset U$ , and such that  $f$  is holomorphic on  $V \setminus W$  and  $f$  is locally bounded on  $V$ .

It is not hard to show that we can then just take  $W$  to be the set of singular points of  $V$  and have  $U = V \setminus W$  as we can extend  $f$  to all the nonsingular points of  $V$ .

Usually we denote by  $\mathcal{O}^w(V)$  the ring of weakly holomorphic functions through  $V$ . Since any neighbourhood of a point  $p$  in  $V$  is a local analytic subvariety, we can define germs of weakly holomorphic functions at  $p$  in the obvious way. We usually denote by  $\mathcal{O}_p^w(V)$  the ring of germs at  $p$  of weakly holomorphic functions.

## References

- [1] Hassler Whitney. . Addison-Wesley, Philippines, 1972.