

Stability properties for ultraholomorphic classes defined by a weight matrix

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We present a characterization of some stability properties for Carleman-Roumieu ultraholomorphic classes, defined on sectors and in terms of a weight matrix. We generalize the result of J. A. Siddiqi and M. Ider for such classes defined on sectors not wider than a half plane and in terms of a single sequence which controls (apart from a constant and a geometric factor) the growth of the complex derivatives. More precisely, we generalize in three directions:

- (i) We give the proof in the general weight matrix setting and get, in particular, the corresponding theorem for the sequence case.
- (ii) We extend the list of stability properties and consider sectors of unrestricted opening. This generalization rests on the construction, under suitable assumptions, of the characteristic functions in arbitrary sectors.
- (iii) By applying these results to the weight matrix \mathcal{M}_ω associated to the weight function ω , we characterize the stability for the ultraholomorphic class associated with ω under suitable conditions.