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VALUE OF A BOEHMIAN AT A POINT AND AT INFINITY

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ABSTRACT. We define the notion of a value of a Boehmian at a point and study its properties. We prove that a Boehmian which has a value at a point is a Borel measure in a neighborhood of that point. We also define the notion of a value of a Boehmian at infinity.

0. Introduction. The name Boehmians is given to all objects defined by an algebraic construction described first in [**3**]. The construction applied to function spaces yields various spaces of generalized functions, see [**5, 6, 8, 10**]. Boehmians include all Schwartz distributions and all regular operators introduced by T.K. Boehme in [**2**]. It is interesting to investigate which properties of distributions extend onto Boehmians. The spaces of Boehmians have all basic properties we expect from a space of generalized functions as stated in [**13**, p. 135]. Some interesting results have been obtained in the area of the Fourier transform and the Fourier series (for periodic Boehmians), see [**6, 10, 11, 12**], as well as other integral transforms [**7, 8**] and [**9**]. In this note we investigate properties of the notion of a value of a Boehmian at a point and at infinity.

Generalized functions do not assign values to points. For example, the Dirac delta distribution does not have a value at the origin. On the other hand it is natural to say that it is equal to zero at any other point. A value of a distribution at a point can be defined in more than one way, see [**1**]. In this note we show that one of those definitions can be adopted for Boehmians and that the concept has desirable properties.

For convenience of the reader, the definition of Boehmians is given in Section 1. Section 2 is devoted to the notion of a value at a point and Section 3 to the notion of a value at infinity.

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