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Erratum

The Distributional Borel Summability and the Large Coupling Φ^4 Lattice Fields

E. Caliceti, V. Grecchi and M. Maioli

Dipartimento di Matematica, Università di Modena, I-41100 Modena, Italy

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Abstract. We complete and correct some proofs of an earlier paper on distributional Borel summability and we add an application which can be useful in the discussion of semiclassical problems.

1. Introduction

In this paper we give some required remarks for a better understanding of Theorem 1 and Proposition 2 of our previous paper [3]. Moreover we suggest an application giving an insight on the discussion of general methods for constructing semiclassical solutions. Since this note is a complement of [3], we use the same notations without repeating definitions and statements.

2. Remarks on References [3]

1) The method of distributional Borel summability described in [3], p. 164, makes use of a Borel transform which in general is not necessarily a distribution, but more precisely belongs to the wider class of hyperfunctions (see [5]). However, in the criterion given in Theorem 1 of [3] we actually restrict ourselves to a class of Borel transforms which are distributions. This justifies the name given to this kind of sum under our assumptions.

2) We can also consider sums of different types, that is of the form $f_\mu(z) = \mu\Phi(z) + (1-\mu)\bar{\Phi}(\bar{z})$, $0 \leqq \mu \leqq 1$. In particular $f_\mu(z)$ becomes the "upper sum" and the "lower sum" of the given asymptotic expansion for $\mu = 1$ and $\mu = 0$, respectively. If the criterion, given in [3] for the distributional Borel sum (which corresponds to the case $\mu = \frac{1}{2}$), applies to a certain series, then it guarantees the existence of all these different types of sums. As a matter of fact the criterion more directly refers to the "upper sum" $\Phi(z)$.

3) In order to justify the last statement at the bottom of p. 166 of [3], we want to