Compatible Differential Constraints to an Infinite Chain of Transport Equations for Cumulants *

V.N. Grebenev†

Institute of Computational Technologies, Russian Academy of Science, Novosibirsk

M. Oberlack‡

Hydromechanics and Hydraulics Group, Technische Universitat Darmstadt

Abstract

We study an infinite chain of transport equations for cumulants which appears in modeling the dynamics of a momentumless turbulent planar wake. The method of compatible differential constraints for formulating its integrability properties is applied. The compatibility conditions obtained make it possible to realize a reduction of the original infinite chain of transport equations and to present an algorithm for calculating cumulants of arbitrary order.

Keywords: differential constraints, infinite chain of transport equations for cumulants, invariant manifold, momentumless turbulent plane wake, selfsimilar solution

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†Corresponding author: vova@lchd.ict.nsc.ru

‡Corresponding author: oberlack@hyhy.tu-darmstadt.de