# Modeling of Turbulence Interface Interactions in Two-Fluid Systems

Hessisches Kompetenzzentrum
für Hochleistungsrechnen

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## Introduction

During this project the statistical model put forward in (Waclawczyk, Oberlack) [1]  is investigated. The new approach allows to relate the model for evolution of the intermittency region (IR), which is the domain where the interface can be found with non-zero probabilty, with properties of the bulk turbulent fluid.

## Methods

Present studies have led to formulation and verification of the Favre averaged IR evolution model (IREM) and the new discretization for the conservative level-set (CLS) method, providing a framework for IREM implementation.[2,3] At first, the *a priori* study of DNS data obtained from simulations on Lichtenberg cluster with the Fastest code and the VOF method [4]  was carried out, during these simulations up to 64 processes were used.

## Results

As the result, velocity and pressure fields of the 2D vortex interacting with the flat air / water interface in the turbulent flow regime were obtained and used in the statistical analysis of the velocity interface correlations.[2,5]

## Outlook

The next step in the developement of IREM is coupling with the

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flow solver and the CLS method, [3]  the preliminary works were performed in (Kraheberger; Waclawczyk et al.). [5,6] For future tests of the IREM model an access to the computational resources of HHLR is required.

## Reference

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