



COLLOQUIUM

In accordance with article 4.6.8 of the SSNS-wb.

Group: Engineering Fluid Dynamics

A part of his MSc thesis

Simon Glazenborg

will give a presentation, entitled:

Multi-level Techniques for solving Kinetic Equations in Condensing Flows

Date: Friday July 2, 2010

Time: 15:00

Room: HR C101

Summary:

The Kinetic Equations can be used to predict the Droplet Size Distribution (DSD) in condensing flow. Each of the kinetic equations describes the number density of an n -cluster as a function of time. The n -cluster, i.e. a droplet consisting of n monomers, can either grow towards an $(n+1)$ -cluster or decay towards an $(n-1)$ -cluster, changing the DSD accordingly.

Solution of the KE requires a considerable computational effort, since typically cluster sizes up to a hundred million monomers have to be included in a numerical simulation. In the past decades in many fields in science it has been shown that multilevel/multigrid concepts can lead to very efficient algorithms to solve (systems) of partial differential equations numerically.

As a first step a multi-level method has been developed for single-component condensing flows described by Kinetic Equations. Performance, accuracy and stability of the method have been analyzed. Results of the method have been compared with results of common solution techniques.

Assessment committee:

Prof. dr. ir. H.W.M. Hoeijmakers (chairman)
dr. ir. C.H. Venner (mentor)
dr. ir. R. Hagmeijer (mentor)
dr.ir. M. van Sint Annaland
Ir. D.S. van Putten
ir. D.F. van Eijkeren

Chairman:

d.d.