Opleiding Werktuigbouwkunde

Universiteit Twente
de ondernemende universiteit

COLLOQUIUM

Conform artikel 4.6.8 van het SSNS-wb.

Vakgroep: **Technische Stromingsleer**

In het kader van zijn/haar doctoraalopdracht zal

Herbert Idink

een voordracht houden getiteld:

Subgrid Modeling in Large-Eddy Simulations

Datum: 27 oktober 2006
Tijd: 14:00 uur
Zaal: Horstring N109

Korte samenvatting:

Turbulent flow problems are still considered one of the most difficult problems in fluid dynamics. The mathematical model that describes turbulent flow are the Navier-Stokes equations. Numerical solving these equations up to all scales is known as direct numerical simulation (DNS). However the numerical methods used to solve the equations that describe turbulence require so much computer resources that these methods cannot be applied for engineering purposes.

In this colloqium large-eddy simulation (LES) methods are discussed. In large-eddy simulation methods a spatial filtering is applied to the governing equations and a filtered velocity and pressure field is obtained. The filtering operation makes it possible to solve the flow problem on a coarser grid than required for DNS. This leads to an substantial reduction of the computational costs. However the filtering operation also introduces a closure problem of the resulting equations.

For the generic use of a channel flow various subgrid models are validated with results from existing literature and with results of direct numerical simulation.

Examencommissie:

Prof. Dr. Ir. H.W.M. Hoeijmakers (afstudeerdocent)

Prof. Dr. Ir. B.J. Geurts (mentor)

Ir. R.H.A. IJzermans

Dr. Ir. C.H. Venner

Ir. H. de Vries

De afstudeerdocent,

(handtekening)

d.d. 03-10-2006