Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Institut für Energietechnik: Prof. R.S. Abhari (LEC), Prof. K. Boulouchos (LAV)
Prof. Ch. Müller (ESE), Prof. H.G. Park (NETS), Prof. D. Poulikakos (LTNT)
Prof. H.-M. Prasser (LKE), Prof. A. Steinfeld (PRE)
Institut für Fluiddynamik: Prof. P. Jenny, Prof. T. Rösgen
Computational Science & Engineering Laboratory: Prof. P. Koumoutsakos

11/09/2014

E I N L A D U N G

zu einem Vortrag im Rahmen des

Kolloquiums Thermo- und Fluiddynamik

Datum: **Mittwoch, 22. Oktober 2014**

Zeit: **16:15 Uhr**

Ort: Maschinenlaboratorium ETH Zürich
Hörsaal ML H 44

Referent: **Prof. Kolumban Hutter**
Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie
ETH Zürich

Titel: **Cryospheric Initial Boundary Value Problems**
In Support of General Circulation Models of the Earth's Climate Evolution

Forecasts of the future impact of climate variations and reproduction of the past climate is done with general circulation models (GCM), which account for the interactive responses of the atmosphere, oceans, pedosphere and cryosphere, etc. This lecture reports on the role played by ice sheets (and ice shelves), such as Greenland and Antarctica.

The physical basis is continuum thermomechanics of non-Newtonian creep flow of polycrystalline ice subject to the thermal, radiative input and precipitation from the atmosphere, the geothermal heat and the deformation of the lithosphere and asthenosphere. We discuss the polythermal field formulations for cold and temperate ice arising in glaciers and large ice sheets. A scaling analysis introduces the shallowness of these shallow Stokes flows and gives rise to various shallow shelf approximations and discloses the matched asymptotic structure of the hierarchy of the approximate equations.

With adequate parameterizations of the past climate the present geometry of the Greenland Ice Sheet is determined and a limited number of theoretical future climate scenarios are tested regarding the contribution of the ice sheet to sea level rise.

Host: Prof. P. Jenny

Gäste sind willkommen!