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18/08/2015

E I N L A D U N G
zu einem Vortrag im Rahmen des
Kolloquiums Thermo- und Fluidodynamik
und des
ERCOfTAC Visitors Programme

Datum: >> *Donnerstag, 27. August 2015* <<

Zeit: 16:15 Uhr

Ort: Maschinenlaboratorium ETH Zürich
>> *Hörsaal ML F 39* <<

Referent: Prof. Hans Hornung
Graduate Aerospace Laboratories, Caltech, Pasadena, USA

Titel: A Model Problem for Supersonic Gas Jets from a Moon

When a gas jet issues from a celestial body, such as is the case on Saturn's moon Enceladus, the problem may be reduced to its simplest form, by considering the gas to be ideal and the flow to be inviscid. In that case the energy equation may be integrated. It turns out that the escape velocity of a gas is much smaller than that of a solid body, because the thermal energy of the gas gets converted to ordered kinetic energy in the expansion. A closed-form solution can be obtained for the altitude above the moon's surface to which a jet will penetrate when the surface speed is less than the escape velocity. This altitude is typically an order of magnitude greater than that reached by a solid body with the same surface speed. Extensive computations show that the ideal isentropic penetration altitude (of a gas) is not reached in the real case, because of the presence of shock waves. An experimental method of modelling this flow qualitatively is being constructed at present.

Host: Prof. P. Jenny

Gäste sind willkommen!