

AUSHANG

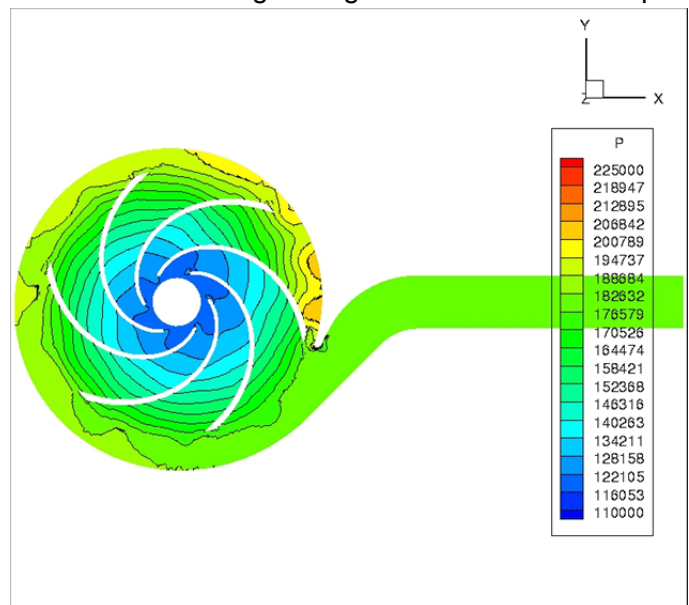
Einladung zum IKET-Kolloquium

- Zeit:** Dienstag, 16. Dezember 2014, 15.00 Uhr
- Ort:** Kolloquiumsraum des IKET, Campus Nord, Bau 419, Raum 104
- Referent:** Prof. Dr.-Ing. Franco Magagnato, Institute of Fluid Mechanics, KIT-CS
- Titel:** Simulation of a Centrifugal Pump using the Harmonic Balance Method

Zusammenfassung:

The Harmonic Balance Method was used for the flow simulation in a centrifugal pump. Independence studies have been done to choose proper number of harmonic modes and inlet eddy viscosity ratio value. The results from harmonic balance method show good agreements with PIV experiments and unsteady calculation results (which is based on the dual time stepping method) for the predicted head and the phase-averaged velocity.

A detailed analysis of the flow fields at different flow rates shows that the flow rate has a very evident influence on the flow fields. At $0.6Q_d$, some vortices begin to appear in the impeller, and at $0.4Q_d$ and $0.2Q_d$ some big vortices choke the flow passage. The flow fields at different positions at $0.6Q_d$ and $0.4Q_d$ show how the complicated flow phenomena are forming, developing, and even disappearing. The harmonic balance method can be used for the flow simulation in pumps, showing the same accuracy as unsteady methods but is considerably faster.



Pressure distribution in the centrifugal pump

gez. T. Schulenberg

Alle auswärtigen Besucher des Kolloquiums werden gebeten, ihren gültigen Personalausweis oder Reisepass mitzubringen.