

## AUSHANG

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## Einladung zum IKET-Kolloquium

Zeit: Dienstag, 10. Januar 2017, 15.00 Uhr

Ort: Bibliothek des IKET, Campus Nord, Bau 420, Raum 204

Referent: Will Logie, PhD Candidate, Solar Thermal, Research School of Engineering,  
The Australian National University, Canberra, Australia

Titel: Thermal-elastic stress in sodium receiver tubes

### Zusammenfassung:

Tubes are used extensively on high temperature solar receivers because they are good pressure vessels, the flow within them is well understood and individual tubes are allowed to thermally deform independently of one another in response to locally-varying flux. Optimization of tubes for a specific fluid and receiver configuration requires an accurate understanding of loss mechanisms - radiation, convection, conduction and friction. Higher efficiency may be achieved by increasing temperature to the power block or by using liquid metals such as sodium to improve internal heat transfer and thereby decrease tube external surface temperatures and thus loss to environment. For indirectly heated fluid receivers, thermally induced stress in the containment material (e.g. nickel-chromium alloy) becomes a key constraint on the allowable receiver flux. A method for the calculation of principal component stress in nonaxisymmetrically heated receiver tubes is presented with OpenFOAM validation. Current and future cases for liquid sodium in the Australian Solar Thermal Research Initiative (ASTRI) are presented for discussion. Some recent activity in the commissioning of VASTSolar's Jemalong pilot plant is appended.

gez. T. Schulenberg

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