



Contribution ID: 410

Type: Oral

## Application of RPT and Densitometry for Measuring Liquid Velocity Field and Void Fraction in Convective Boiling Flows

*Monday, 24 April 2017 12:15 (20 minutes)*

Convective boiling flows are found in nuclear reactors and are subject of numerous experimental and theoretical studies. The thermal hydraulics of the nuclear reactor, especially boiling water reactor (BWR), is affected by the complexities of two-phase flow around the rods driven by a vertically distributed heat flux in the rods. One of the main challenges in operating this kind of a reactor system are in the complexities of two-phase flow around the rods driven by a vertically distributed heat flux in the rods. Knowledge of the time-averaged void fraction distribution as well as the velocity profiles of the liquid phase are of great relevance in design of these systems, for providing validation data for thermal-hydraulic CFD codes, as well as for design of nuclear safety systems.

In this contribution, measurement of liquid phase velocity field and void fraction using RPT and densitometry respectively at different conditions and heater rods arrangements will be reported.

The talk will discuss the various challenges faced in making these measurements in boiling flows, and how they were overcome. Further, key findings from the hydrodynamics, which can be obtained only through the use of these radiation-based imaging techniques, will be presented.

### Country/Organization invited to participate

India

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**Session Classification:** B01

**Track Classification:** RADIATION TECHNOLOGIES FOR MEASUREMENT