



**Hacettepe University  
Nuclear Engineering Department  
SEMINAR**

**May 25, 2016 14:00**

**Physics Engineering Department Seminar Room, Beytepe**

**" VERA-CS Modeling and Simulation of PWR Main Steam  
Line Break Core Response to DNB "**

Consortium for Advanced Simulation of Light Water Reactors (CASL) sponsored by the US Department of Energy is a multi-year program established to provide advanced predictive capabilities to improve the performance of currently operating light water reactors. To achieve this goal, CASL is developing the Virtual Environment for Reactor Applications core simulator (VERA-CS). CASL's VERA-CS simulates nuclear reactor physical phenomena using coupled multi-physics models, including neutronics, thermal-hydraulics (T/H), and fuel temperature components with an isotopic depletion capability. As part of the CASL development program, the VERA-CS (MPACT/CTF) code system was applied to model and simulate a PWR main steamline break event at the most limiting point of a postulated pressurized water reactor (PWR) main steam line break (MSLB) event with offsite power (high-flow scenario) and without offsite power (low-flow scenario) available.

This seminar will introduce the CASL program, with focus on the VERA-CS software. An overview of the VERA-CS codes, validation efforts, as well as the calculational mainframe developed for the MSLB simulations will be provided. Results from both high- and low-flow scenarios will be presented to determine the limiting departure from nucleate boiling (DNB) ratio.



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