Current status of the VTR core design

Abstract: The Versatile Test Reactor (VTR) is a new fast spectrum test reactor that is currently being developed in the United States. Its mission is to enable accelerated testing of advanced reactor fuels and materials required for advanced reactor technologies. This includes neutron irradiation capabilities which would support alternate coolants including molten salt, lead/lead-bismuth eutectic mixture, gas, and sodium. In its current development state, the VTR is a 300 MWth sodium-cooled fast reactor, connected to an air-dump heat exchanger system. It offers a peak fast flux in excess of 4.0x10^15 n/cm^2-s, made possible through using ternary metallic fuel U-Pu-10Zr and a high-power density. This presentation will give an overview of the preliminary VTR core design configuration and associated performance. It will discuss the testing performance such as flux levels and volumes, axial and radial distribution, etc. that will be offered by the VTR.

Biography: Florent Heidet is the Core Design and Safety Analysis lead for the Versatile Test Reactor and the Research and Test Reactors programs at Argonne National Laboratory. Dr. Heidet is an advanced reactor expert focusing on enabling development of advanced reactor technologies, including design and analysis of various nuclear systems. He is also leading activities at Argonne aiming at advancing the state of Molten Salt Reactor technology and supporting reactor conversion effort under the NNSA M3 program. Dr. Heidet obtained his Ph.D. from the University of California, Berkeley in 2010.