Abstract

Transport theory methods enable numerical simulations of nuclear systems to understand and optimize their performance. However, novel, advanced reactor designs and complex nuclear systems challenge the limitations and capabilities of the current methods, thus necessitating further developments and improvements. Due to steady increase in computational power, Monte Carlo methods are gaining popularity even for applications where their application was previously considered prohibitive. However, significant issues remain for criticality simulations of large power reactors, including convergence and incorporation of the feedback effects. Some of these issues will be discussed in the talk, followed by representative examples of additional topics from the speaker's recent research. Emphasis will be on introducing and identifying areas of potential interest for future collaborative research.

Biosketch

Bojan Petrovic is a Professor at the Nuclear & Radiological Engineering and Medical Physics Programs at Georgia Tech. Prior to that, he was a Fellow Scientist at the Westinghouse Science and Technology Department in Pittsburgh, Pennsylvania, where he was involved in advanced reactors design. Dr. Petrovic holds a B.Sc. degree in mathematics, and M.S. and Ph.D. degrees in Nuclear Engineering. Areas of his research interest include reactor physics and transport theory, advanced reactors design, and application of nuclear technology to industry and medicine. Dr. Petrovic has authored over one hundred articles published in journals, monographs and conference proceedings as well as over one hundred technical reports.