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Local Monte Carlo Problem Formulations Embedded in a Global Iteration Scheme for Whole-Core Transport Solution

Presented by

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Abstract:

In the nuclear reactor analysis and design, the direct whole-core transport calculation without homogenization (in either multigroup deterministic or continuous-energy Monte Carlo method) is not yet tractable for routine use with current computing power. As an alternative to the direct approach, an overlapping local/global (OLG) iteration scheme was introduced by the author and co-workers, in which the local problem based on a multigroup deterministic method or a continuous-energy Monte Carlo method is embedded in the partial current-based coarse-mesh finite difference (p-CMFD) global problem.

This talk presents, in the case of continuous-energy Monte Carlo local problem, two formulations; *(i)* eigenvalue problem (EVP) formulation with albedo boundary condition and *(ii)* fixed-k problem (FKP) formulation with incoming partial current boundary condition, and compares the two formulations.

About the Speaker:

Dr. Nam Zin Cho is a KEPCO Endowed Chair Professor of Nuclear and Quantum Engineering at the Korea Advanced Institute of Science & Technology (KAIST). His previous positions include: Staff Scientist, SAI, Palo Alto (1980-1982), Nuclear Engineer, BNL, Long Island (1983-1987), Commissioner of Atomic Energy Commission, Republic of Korea (2003-2006), and President of the Korean Nuclear Society (2007-2008). In his present position, Dr. Cho teaches and conducts research in reactor physics and neutron transport computation.

ANS: Member since 1977, Fellow since 2001; Chaired several special sessions; Technical Program Chair, PHYSOR 2002, Seoul, Korea; Associate Editor, Nuclear Science & Engineering