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MULTIPOINT KINETIC SCHEME FOR THE STUDY OSCILLATIONS IN A NUCLEAR REACTOR CORE

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Abstract. To globally describe the behavior of a nuclear reactor, representing the whole core with a single point is sometimes fair enough. This implies defining properties without taking into account the spacial variations that could occur, provided that total power generated is conserved. However, there are some situations where this approach does not allow the analysis of the behavior of the different regions of the reactor core. For example, in order to study the performance of the axial (or azimuthal) power control system in a nuclear reactor, it is required to know how certain magnitudes vary along the different coordinates. In this context, the concentration of Xe-135 is of particular interest during the power control system design and optimization process. Several core level neutronic codes do calculate this distribution with a high degree of detail, but the time demanded in the calculations could be considerable when performing a parametric study. Consequently, the possibility of implementing a multipoint kinetic scheme able to calculate spatial variation of certain magnitudes has been evaluated in order to study the performance of the power control system during operational transients and also to adjust certain parameters for its optimization.