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METHOD IN NUCLEAR REACTOR/ REACTOR DESIGN, SUB-CRITICAL NUCLEAR REACTOR

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SUBCRITICAL NUCLEAR REACTOR. THESIS ADVISOR : ASST.PROF.DR.
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This thesis is the development of the computer program NEUDAN for calculating the criticality and the neutron flux distribution in a sub-critical reactor. Based on the multi-group diffusion equations, the calculation is performed by using the finite difference method under the assumption that the change in the neutron energy is directly coupled between two adjacent energy groups. In the Cartesian coordinate, the comparison of the analytical solutions with the calculated results confirms the accuracy of NEUDAN for the cases of the homogeneous medium. In addition, the estimation of the criticality and distribution of the neutron flux in the reflected core and the estimation of the distribution of the neutron flux in the core with the external neutron source are also attempted. Currently, NEUDAN has one disadvantage in that it does not provide the nuclear data for the calculation. It is up to the user to supply such data in order to make the calculation.