TITLE

Introduction to reactor kinetics

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Teaching staff

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Reception hours: by appointment (send e-mail)

Program of the course:

Basics of reactor kinetics: relation to reactor statics; prompt and delayed neutrons, characteristics times; controllability of nuclear reactors; effective multiplication factor.

The "point model": simplifying assumptions and derivation of point kinetics equations; constant reactivity; *Inhour* equation; simplified models (small, large reactivity, 2 groups of delayed neutrons). Overview of space kinetics; adjoint flux.

Intrinsic reactivity change: reactivity temperature coefficients; reactivity feedback models; power excursions; small oscillations around equilibrium power.

Stability: linear stability of nuclear reactors.

Prerequisites: working knowledge of macroscopic cross sections and of the diffusion equation.

Bibliography:

David Hetrick: Dynamics of Nuclear Reactors, American Nuclear Society, 1993

Jeffrey Lewins: Nuclear Reactor Kinetics and Control, Pergamon Press, 1978

Robert Keepin: Physics of Nuclear Kinetics, Addison Wesley, 1965