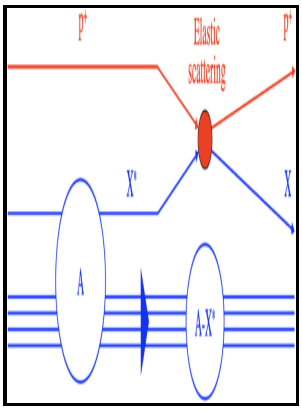
Kinematics of nuclear reactions

Iliffe - Kinematics of Nuclear Reactions Calculated with the IBM



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-Kinematics of nuclear reactions
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Nuclear Reactions

As prompt criticality is reached, the distinction between the prompt jump and the reactor period vanishes, for now the prompt neutron lifetime rather than the delayed neutron half-lives largely determines the rate of exponential increase.

Reactor Kinetics

But even if it were possible to insert an infinite negative reactivity, the neutron flux would not immediately fall to zero.

Nuclear Reactions

The reactor is therefore reduced to a point. Due to the presence of reactivity feedbacks the positive reactivity insertion is counterbalanced by the negative reactivity from and fuel temperature coefficients.

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Xenon poisoning or spatial oscillations. Instead, they specify a limiting rate of neutron power rise measured by excore detectors , commonly called a startup rate especially in case of. In large , the decrease in the fast fission factor will also dominate the increase in the fast non-leakage probability and the β eff is less than β by about 10%.

Reactor Kinetics

Longer lifetimes give simply slower responses of multiplying systems. The most common units for research reactors are units normalized to the e. Instead, they specify a limiting rate of neutron power rise measured by excore detectors , commonly called a startup rate especially in case of.

Reactor Kinetics

The role of reactivity k eff — 1 is also evident. The presence of causes the power rise to be controllable and the reactor can be controlled by or another reactivity control mechanism. A reaction cannot take place unless particles y and Y emerge with positive kinetic energies, i.

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This coefficient is of the highest importance in the reactor stability. This work shows that under certain conditions all of these problems can be minimized by employing kinematic coincidence for complte determination of the secondary reaction final state, from which secondary beam particle, energy, and angle, can be determined. In normal operation, the reactivity of a reactor must remain far below the prompt criticality threshold with sufficient margin.

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