

PWR fuel assembly burnup with and without thorium addition

Tuesday, 4 November 2025 10:15 (15 minutes)

Isotope ^{232}Th is the only isotope of thorium naturally occurring in the nature and it is a fertile material. As a result of neutron capture by ^{232}Th and two consequent beta decays appears fissile isotope ^{233}U being a good nuclear fuel. Furthermore, the use of thorium may result in an extension of the fuel campaign.

There are numerous research papers available on the use of thorium in nuclear reactors. Unfortunately, so far, there has been no success in disseminating thorium-based fuel.

The authors investigated many geometrical models of fuel assemblies with ThO_2 , including Radkowsky thorium fuel seed-blanket concept or checkerboard layout. In this paper the impact on burnup of typical PWR fuel assemblies with addition of small amount of Thorium is reported.

The presented results are a small part of the research conducted on the effective use of thorium in PWR assemblies.

Technical Track

Reactor Physics

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Session Classification: Reactor Physics