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Conversion strategy for the FRM II compact core

Thursday, 27 June 2019 11:00 (30 minutes)

To support the global nonproliferation efforts, FRM II is actively working towards the conversion of its compact fuel element to a uranium enrichment, which is significantly lower than its current enrichment of 93%. Thereby, it is of utmost importance that the scientific performance does not suffer and that such new fuel element fits in the current core geometry to provide a continuous operation. This cannot be achieved with the currently available fuel systems, which therefore, requires a new high-density fuel to be developed and qualified to be used in high performance research reactors. Based on a preliminary parameter study, two promising core designs are presented: One using dispersed, high-density U3Si2 and a more promising one using a monolithic uranium-molybdenum alloy. Not only new fuel fabrications methods have to be developed, also, the changed material properties like thermal conductivity have to be measured.

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