Contribution ID: **429** Type: **Sectional talk**

Effective numerical-analytical method for modeling the dynamics of a fuel cell system for a pulsed-type reactor

Tuesday 8 July 2025 18:15 (15 minutes)

Modeling the dynamics of a dissipative system of interacting fuel elements of the new-generation NEPTUN pulse reactor is considered from the standpoint of Hamiltonian formalism. An exact analytical expression is obtained within the "zero"approximation, it describes the evolution of the phase portraits of the system and allows for an efficient numerical implementation on the architecture of GPU graphics processors.
The algorithm enables to find natural frequencies and oscillation modes, as well as to optimize system parameters to assess the stability of the reactor operation.

Authors: PEREPELKIN, Evgeny (JINR); KLIMENKO, Mikhail; POLYAKOVA, Rimma (LIT JINR)

Presenter: KLIMENKO, Mikhail

Session Classification: Methods and Technologies for Experimental Data Processing