NATIONAL RESEARCH NUCLEAR UNIVERSITY MEPHI

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TECHNICAL PROGRAM

XVI International Scientific Conference and School of Young Scholars "Physical and Chemical Processes in Atomic Systems"

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DETONATION ENGINES

S.M. Frolov
Semenov Institute of Chemical Physics (ICP), Moscow, Russia

At present, aerospace propulsion engineering addresses several promising areas of development. One of them is the use of detonative rather than deflagrative combustion of the reactive mixture in liquid rocket engines, ramjets and turbojets. The expediency of transition to the detonative combustion is mainly due to the higher efficiency of the thermodynamic cycle with detonative combustion as compared with the conventional cycle using relatively slow combustion at constant pressure. The lecture outlines the current accomplishments and challenges in theoretical and experimental studies of detonative combustion of hydrogen and hydrocarbon fuels as applied to the aerospace propulsion. Various demonstrators of propulsion devices operating on continuous detonations are presented and their thrust performances are discussed.