An approach to numerical modeling of hydrogen-air-dust mixture combustion

Gavrikov A.I.[1,@] **and Danilin A.V.**[1]

[1] Nuclear Safety Institute of the Russia Academy of Sciences, Bolshaya Tulskaya Street 52, Moscow, 115191, Russia

[@] bass-4@yandex.ru

Based on one-dimensional calculations using detailed chemical kinetics of hydrogen combustion and single-stage chemical kinetics of tungsten dust oxidation by oxygen and steam, the combustion of hydrogen-air-dust mixtures is considered.
Based on the calculations performed, two main combustion modes are distinguished: the one stage combustion mode and the two stage combustion mode.
In the first case, the gas-dust mixture burns as a single whole, while in the second, the ignition of the dust phase occurs with a delay relative to the combustion of the gas mixture.
For each of the cases, an approach to numerical modeling is proposed for use in large-scale combustion problems.