

# ***THREE-DIMENSIONAL STUDY OF ISOLATED FLAME CELL PROPAGATION IN ULTRA-LEAN HYDROGEN-AIR MIXTURES***

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## **Work-In-Progress abstract**

This study presents a three-dimensional numerical analysis of hydrogen-air flame propagation under lean-flammability conditions. The flame propagation takes place between two parallel plates separated by a narrow gap of 4 mm, resulting in significant heat losses. The analysis provides insight into the flame shapes and propagation rates of two distinct isolated solutions recently observed experimentally: circular flames and double-head flames. A stability map is delineated to show the occurrence of these two flame regimes as a function of heat loss and equivalence ratio, and direct comparison with experiments is provided.