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**北京大学工学院**

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| **Influence of combustion-induced thermal expansion on turbulence in premixed flames: Recent findings and fundamental issues** |

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**Abstract:**

Premixed combustion commonly occurs in thin zones where flow characteristics (density and normal velocity) drastically change. Accordingly, large pressure gradients and high dilatation rate are localized to such zones, thus, significantly affecting the flow and, in particular, turbulence. In the talk, certain phenomena caused by such pressure gradients and dilatation are discussed, with the specific emphasis being placed on the classical problem of flame-generated turbulence and physical mechanisms behind it. The goal of the talk is not only to overview existing knowledge and recent developments in the field, but also to illuminate knowledge gaps and fundamental issues to be resolved, e.g., characterization of turbulence within premixed flame brush, the influence of flame-generated vorticity on the flame-surface area, potential velocity fluctuations generated due to combustion-induced thermal expansion, as well as flow and turbulence perturbations upstream of the flame.

**Brief Biography:**

Andrei Lipatnikov was born in Kemerovo, Russia, in 1961. He graduated from the Department of Molecular and Chemical Physics of Moscow Institute of Physics and Technology in 1984 and obtained the Ph.D. degree from the same department in November 1987. From the graduation in 1987 until 1996, A. Lipatnikov had been employed as junior researcher, researcher, and senior researcher at the Moscow Institute of Physics and Technology. In July 1996, he was invited to join the Department of Thermo and Fluid Dynamics of Chalmers University of Technology, Gothenburg, Sweden, as a guest scientist. In May 1998, he was permanently employed as a senior researcher at the same department. Since July 2017 he has been employed as a research professor. The academic activities of Andrei Lipatnikov have been concerned with investigation of turbulent and laminar combustion processes, pollutant formation in flames, autoignition of premixed mixtures, numerical modeling of turbulent burning in spark ignition engines and gas turbine combustors. He has published a monograph and about 320 scientific contributions including 147 journal papers dealing with the above subjects.

**时间：2023年11月21日（周二）上午10:00－11:00**

**地点：北京大学 工学院 1#楼210会议室**

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