

## Effect of Unsteady Pressure Rise on Near-Cold-Wall Ignition and Flame Propagation

## Thursday, October 18th, 2:00 –3:00 pm; Room EIS-320

## Abstract:

Thermodynamic pressure rise during combustion is a key feature in internal combustion engines. Yet, hardly any studies have been conducted to investigate the effects of transient pressure rise on the ignition of the unburned gas as well as on flame propagation. In this talk, results obtained from a parametric study performed using a onedimensional reacting flow model in which the thermodynamic pressure variation is an independent variable will be presented and discussed. Results indicate that unsteady pressure rise has a strong influence on the near-wall ignition dynamics of a reacting mixture that exhibits the negative temperature coefficient behavior. Results also show that burning rates of premixed flames are modified by a notable extent for pressure rise rates encountered in engines.



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## **BIO:**

Jagannath Jayachandran is an Assistant Professor in Aerospace Engineering at the Worcester Polytechnic Institute. He completed his Ph.D. and post-doctoral tenure at the University of Southern California. His research interests include aerodynamic and kinetic processes in flames, physical and chemical processes at extreme thermodynamic conditions, air-breathing and rocket propulsion, detailed modeling of reacting flows, and laser-based experimental methods.

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