

COMBUSTION WEBINAR

Windows into the inferno: experiments for cryogenic rocket combustion instability

Speaker: Justin Hardi, German Aerospace Center (DLR)

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COMBUSTION
WEBINAR



Abstract: Combustion instability is a problem that has vexed engine developers since the beginning of rocketry. The phenomenon has been reproduced in several high power rocket combustors by the Combustion Dynamics Group of the Department of Rocket Propulsion Technology at DLR Lampoldshausen. The group specialises in the experimental investigation of combustion instabilities in liquid rocket engines. The stability characteristics of sub-scale rocket thrust chambers with LOX/H₂ and LOX/LNG propellants are explored, and the interaction of combustion chamber processes with acoustics are visualised under conditions highly representative of launcher engines. The experiments provide insights into the mechanisms which drive combustion instabilities and serve as test cases for numerical modelling.

Biography: Justin Hardi graduated with a double degree in Aerospace Engineering and Physics from the University of Adelaide in Australia, and then moved to Germany to work on the topic of combustion instabilities in cryogenic engines at the German Aerospace Center (DLR), Institute of Space Propulsion, Lampoldshausen. After receiving his PhD in 2012 he led combustion dynamics research at the institute until becoming Head of the Rocket Propulsion Technology Department in 2020.

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