

# DEPARTMENT OF MECHANICAL & AEROSPACE ENGINEERING

## WILLIAM MAXWELL REED SEMINAR SERIES

### “Airborne Observations - Measuring High-Speed Events in the Real World”

**Fabian Zander, Ph.D.**  
University of Southern Queensland

#### Abstract:

The Hypersonics and Rocketry Group (HypR) at the University of Southern Queensland has a speciality in high-speed field work. For various reasons in hypersonics, and space sciences more generally, it is very difficult, if not impossible, to completely recreate real flow field environments in wind tunnels. We can recreate individual phenomena very well, but not the full physics. This means that if we want data on real flow fields we need to go out and measure them.

HypR has specialized in the planning and undertaking of (comparatively) low cost and rapid response missions to get these measurements. Starting with the observation of the Hayabusa2 capsule in 2020, and followed by the Tau Herculids meteor shower, the OSIRIS-REx re-entry capsule, and most recently the NG20 Cygnus spacecraft, HypR has planned and executed complex mission to capture data from re-entry flights, meteor showers and space debris. This data is then analyzed and provided to the community for analysis and to help develop modelling tools.

#### Speaker Bio:

A/Prof. Fabian Zander completed his PhD at the University of Queensland in 2013, developing a new technique for hot wall testing in expansion tubes (or any impulse facility). This technique is now used in facilities around the world for testing of hypersonics models. Following his PhD he did his Post-Doctoral research at the University of Stuttgart in the Plasma Wind Tunnel laboratory with the High Enthalpy Flow Diagnostics Group. Since 2018 he has been at the University of Southern Queensland as a tenured academic working on the hypersonic wind tunnel and optical diagnostics. A/Prof. Zander co-leads the HypR Group and leads the remote diagnostics team. His recent achievements including leading airborne observations of Hayabusa2, the Tau Herculids meteor shower, OSIRIS-REx and the NG20 Cygnus re-entry.

**Date: Tuesday, August 13, 2024**  
**Place: Grehan Building 203**

**Time: 3:30 PM EST**  
**Contact: Dr. Jonathan Wenk**

Attendance open to all interested persons