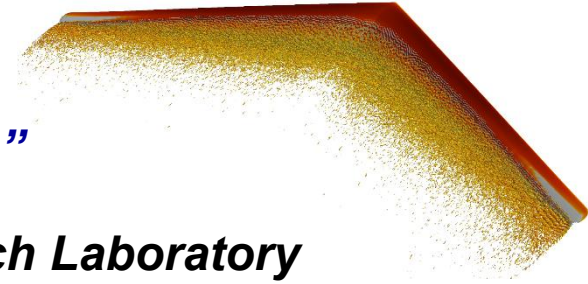




Lunch 'n' Learn: Aug 7th, 2026
**“Enabling Mission-Tailored Platforms
through non-traditional lift distributions”**

Guest Speaker:

Dr. Patrick Hammer; Air Force Research Laboratory



Abstract: One of the fundamental drivers of improving aircraft performance is by reducing lift-induced drag. Although a variety of techniques has been adopted over the decades to reduce induced drag, designing wings with lift distributions that minimize this quantity has been around since the 1920's. The standard in aerodynamic design has been Ludwig Prandtl's elliptical lift distribution. Recently, however, there has been renewed interest in non-traditional lift distributions, of which Prandtl's bell-shaped lift distribution is the most prominent example, due to different attributes that may improve the next-generation fleet of aircraft. The current study represents a multi-fidelity campaign to understand fundamental aerodynamics of the bell-shaped lift distribution. The geometry selected is the Prandtl-D, a flight demonstrator developed by NASA. Reynolds-Averaged Navier-Stokes (RANS) and Implicit Large-Eddy Simulations (ILES) computations are undertaken at transitional Reynolds number to better understand and explain characteristics of the flow topology that have been noted in the literature pertaining to bell-shaped lift distributions.

Biography: Dr. Patrick Hammer received his Bachelor's of Science degree in Mechanical Engineering from Michigan State University in 2008. He earned his Master's of Science degree in Aerospace Engineering from the University of Dayton in 2011. Dr. Hammer completed his Doctoral Degree in Mechanical Engineering from Michigan State University in 2016, after which he performed Post-Doctoral Research at Michigan State University in the Turbulent Mixing and Unsteady Aerodynamics Lab (TMUAL). In 2019, he became a contractor for the Air Force Research Lab (AFRL) within the high-fidelity computational group. He transitioned to a civil servant at AFRL in 2022 to continue supporting the computational group. He currently works in the Computational Aerodynamics branch of the Air Warfare Directorate. His research interests include: vortical flows, unsteady aerodynamics, multi-fidelity CFD, dynamic stall, flapping, low-Reynolds number flows, and vehicle design.

Time: 11:45 am

Location:

China Garden Buffet
112 Woodman Dr.
Dayton, OH 45431

Lunch:

***You will be able to
purchase the buffet***

