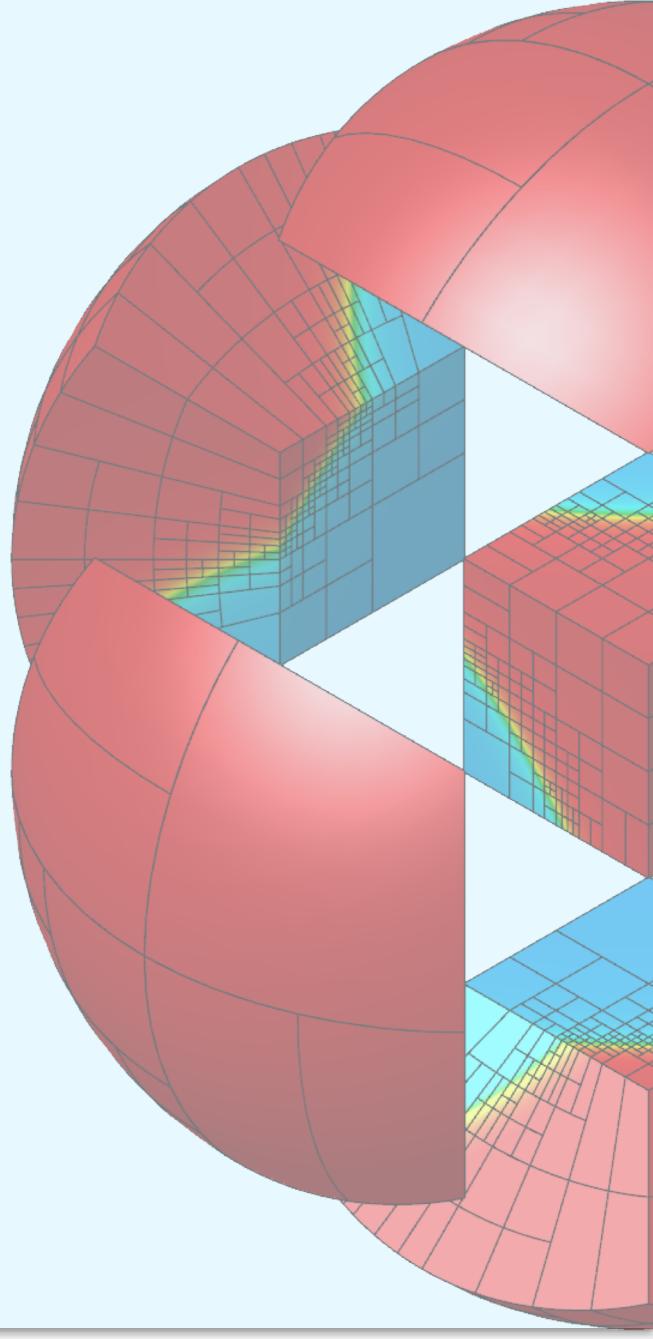


# Simulation Contest



# Simulation and Visualization Contest Winners!



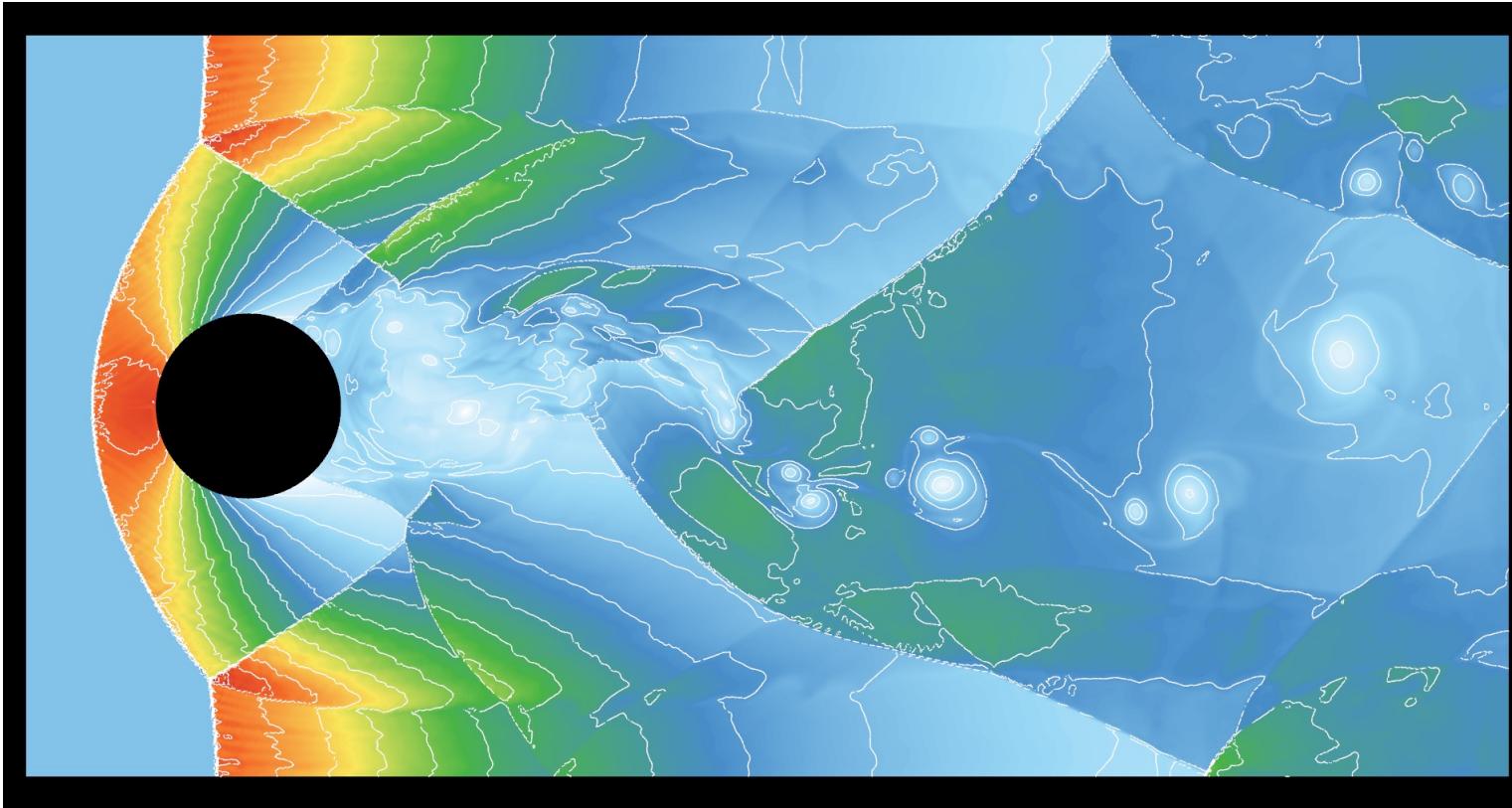
- We held a contest for the most interesting simulations and visualizations.
- So many good entries that we broke it into 2 categories, still images and animations.
- Entries were judged on aesthetic qualities, novelty of the approaches, and the notability of the application.
- Results will be featured on the MFEM webpage, and the winners will receive MFEM T-Shirts.

# 2<sup>nd</sup> Runner up for Still Images

?



## 2<sup>nd</sup> Runner up for Still Images



Compressible Euler simulation of  
mach 3 flow around a cylinder in  
2D.

Hennes Hajduk  
TU Dortmund University

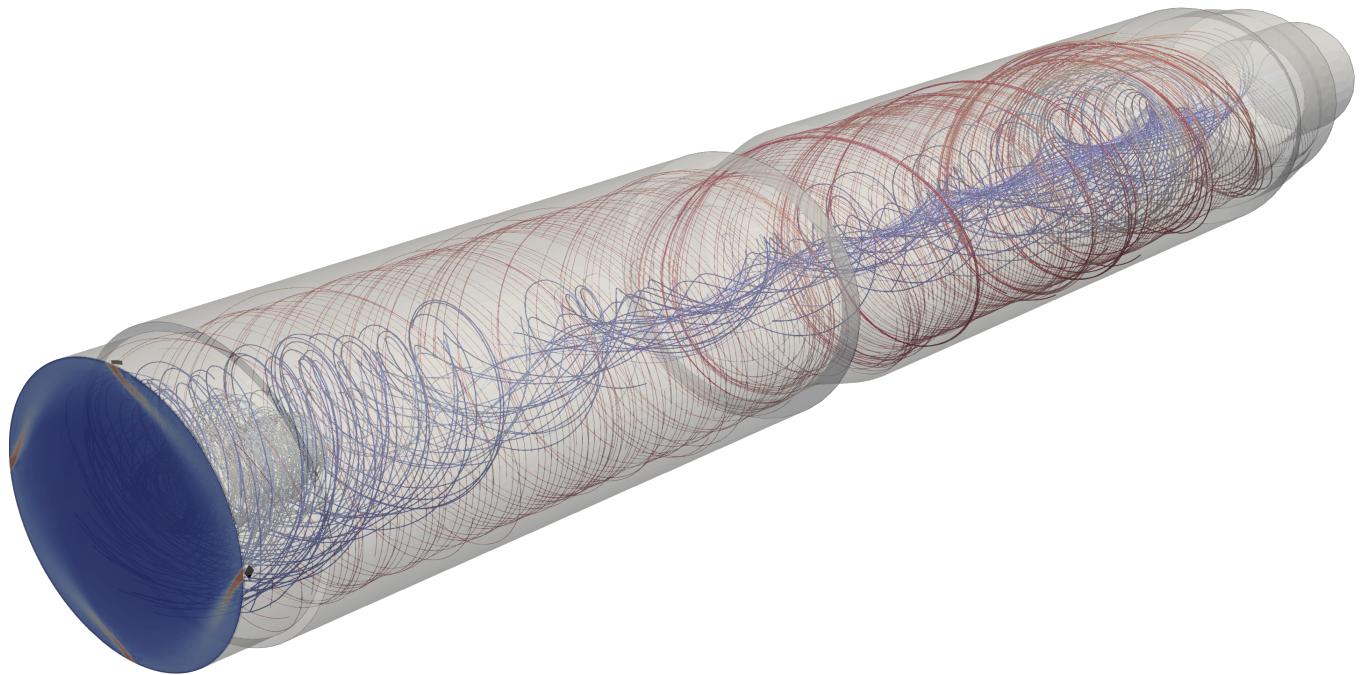


# Runner up for Still Images

?



# Runner up for Still Images



Compressible Navier-Stokes simulation of gas injection in a cylindrical plasma torch. Simulation is resolving two large vortical structures in red and blue traveling in opposite directions.

Karl W. Schulz  
University of Texas

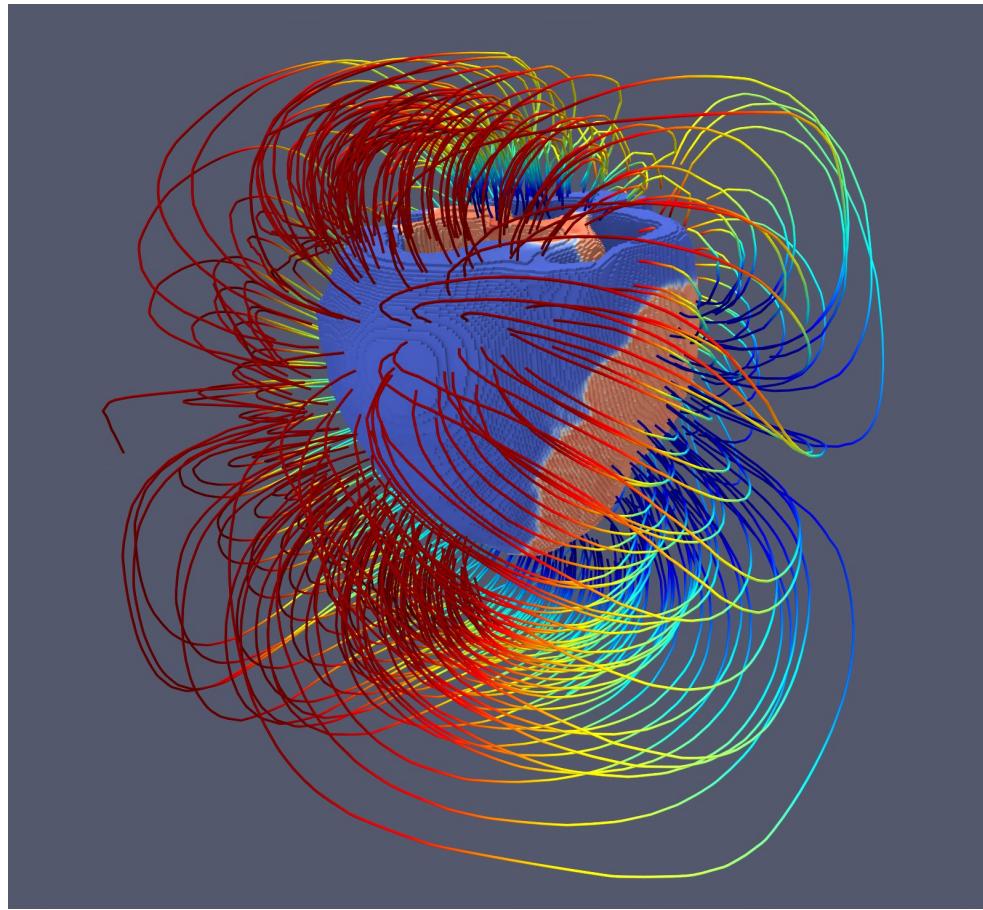


# Winner for Still Images

?



# Winner for Still Images



Visualization of the electric field generated by the electrical wave on rabbit heart ventricles during depolarization of the heart. The ventricles are embedded in a passive conducting volume. This model is an experimental setup for the investigation of QRS-waves in electrocardiograms emerging from the electrical activity of the ventricles.

Dennis Ogiermann  
Ruhr-University Bochum

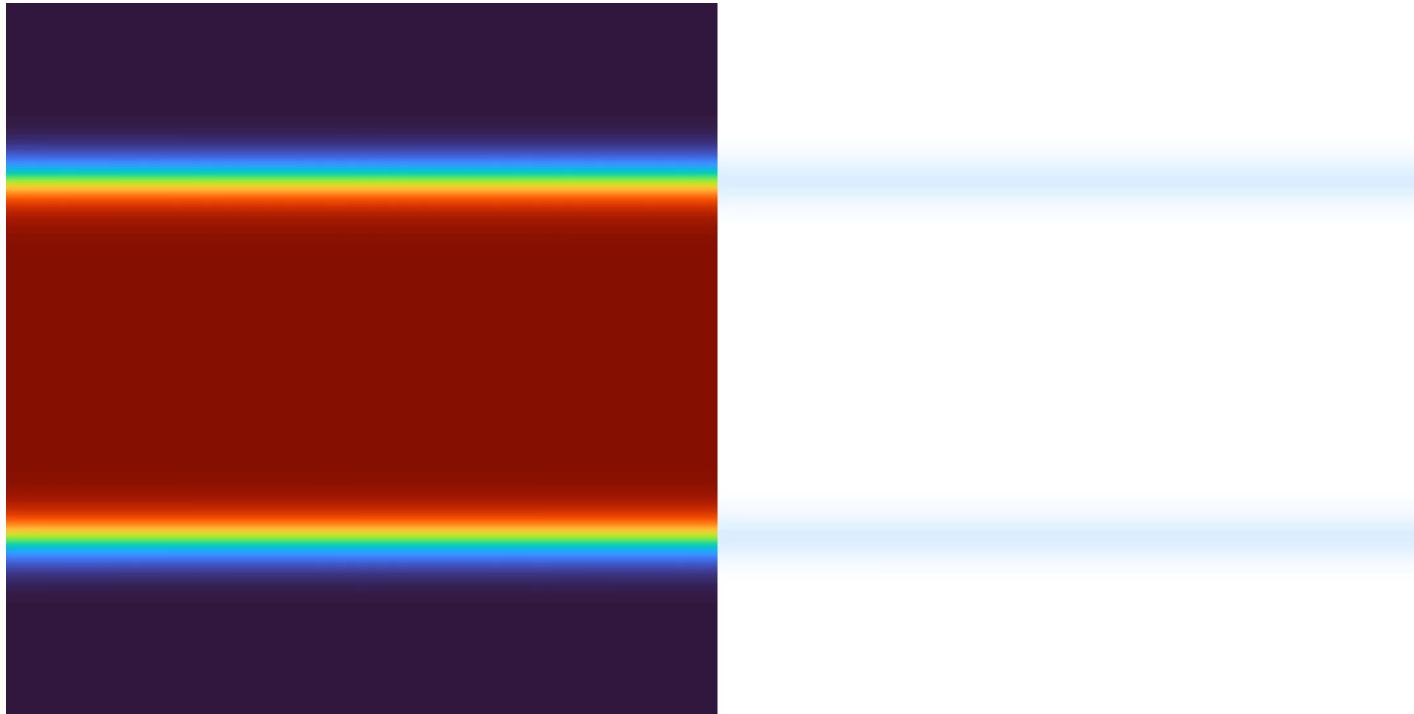


# 2<sup>nd</sup> Runner up for Animations

?



## 2<sup>nd</sup> Runner up for Animations



Inviscid Kelvin-Helmholtz instability using high-order invariant domain preserving discontinuous Galerkin methods with convex limiting.

Will Pazner  
LLNL

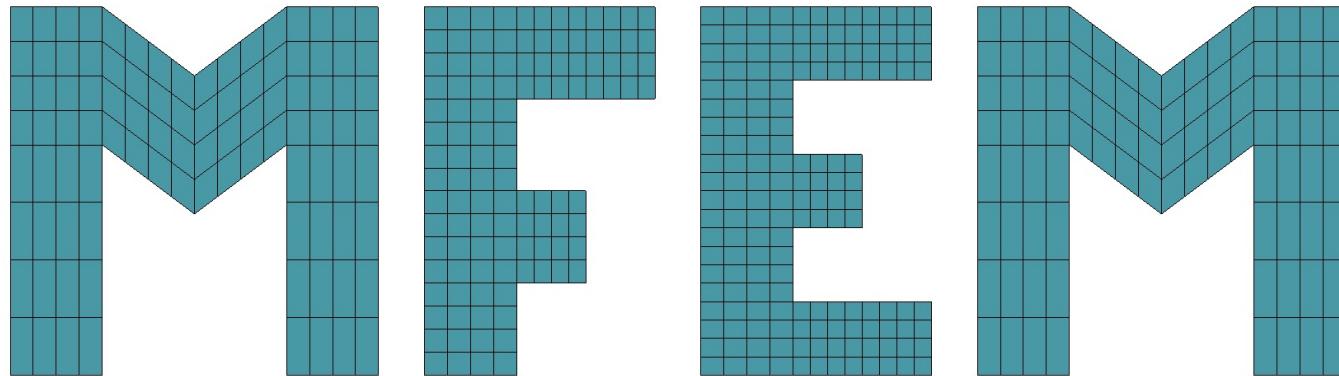


# Runner up for Animations

?



# Runner up for Animations



Compressible Euler simulation of  
blast waves in the Lagrangian  
frame on the MFEM logo.

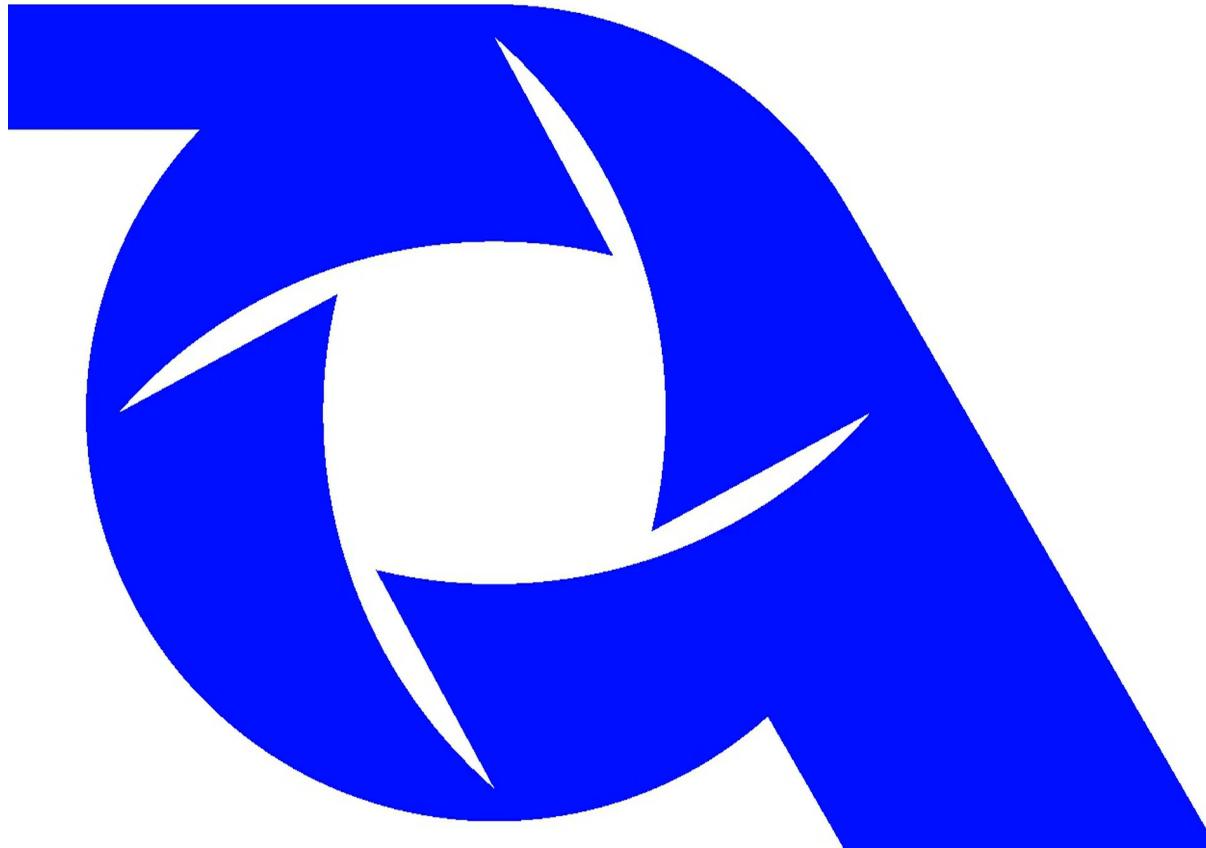
Vladimir Tomov  
LLNL

# Winner for Animations

?



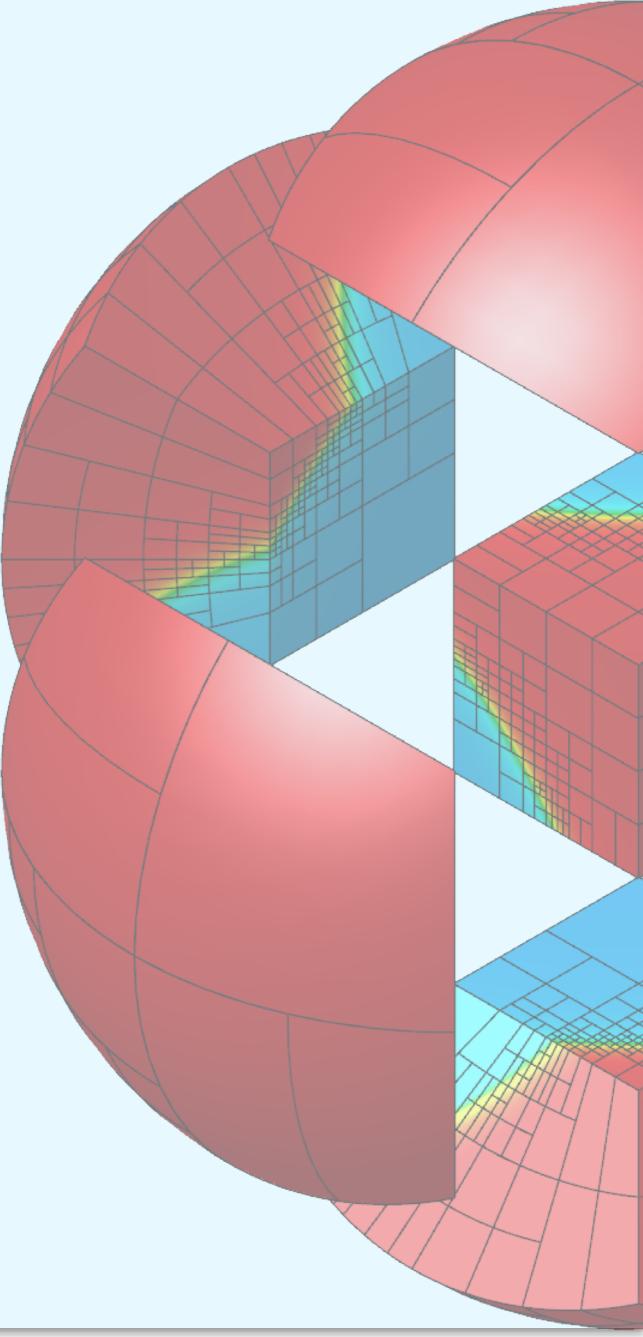
# Winner for Animations



Tamas Horvath  
Oakland University

Incompressible fluid flow around a rotating turbine. Fluid-rigid body simulation using space-time embedded-hybridized discontinuous Galerkin discretization

# Wrapup



# MFEM Resources



- Github:
  - Repo - <https://github.com/mfem-mfem>
  - Issues - <https://github.com/mfem-mfem/issues>
  - Group - <https://github.com/orgs/mfem/teams/everyone>
- mfem.org:
  - Front page – <https://mfem.org>
  - Workshops – <https://mfem.org/workshop>
- Publications:
  - MFEM: A Modular Finite Elements Library, Computers and Mathematics with Applications, June 2020
  - <https://mfem.org/publications>
- Planning a seminar series, stay tuned!
- Contact us:
  - Near term Slack - <https://mfemworkshop.slack.com>
  - Near term email – [mfem@llnl.gov](mailto:mfem@llnl.gov)
  - Long term Github issues - <https://github.com/mfem-mfem/issues>

See you all next year!



# Gratitude



- Applause for the speakers
- Many thanks to our discussion leaders: Mark Stowell, Julian Andrej, and Jamie Bramwell
- Special thanks to the workshop planning committee: Tzanio Kolev, Mark Stowell, Will Pazner, and Holly Auten
- Thank you all for attending.

# Thank you from the MFEM team at LLNL!

