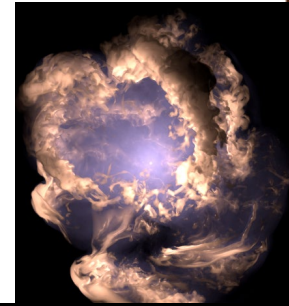


# GPU- Accelerated Interactive Scientific Visualization Techniques (SciVis)

- Scientific data visualization (SciVis) is a hybrid field at the cutting-edge intersection of real-time interactive computer graphics, physically-based rendering, parallel software algorithms, and high-performance heterogeneous and GPU parallel computing hardware architectures.
- Scalar, vector, and volumetric visualization techniques
- Focus on latest highly-parallelized graphics and compute APIs
  - Current OpenGL 4.x, OpenCL 2.x standards-based
- In-depth data visualization case studies:
  - convective and radiative heat transfer
  - electromagnetic wave propagation
  - biomedical applications
  - nonlinear computational fluid dynamics
  - interactive molecular dynamics
- Hands-on, in lab, project-oriented curriculum.
- *Class grade based on 4 homeworks and in-depth final project.*



**Image credits** (clockwise from upper left): M. Ament, *Volume Rendering* (2014); Kroes, *Exposure Render* (2012); SolidAngle, *Jawset Turbulence FD toolkit* (2016).

C/C++ coding intensive!

