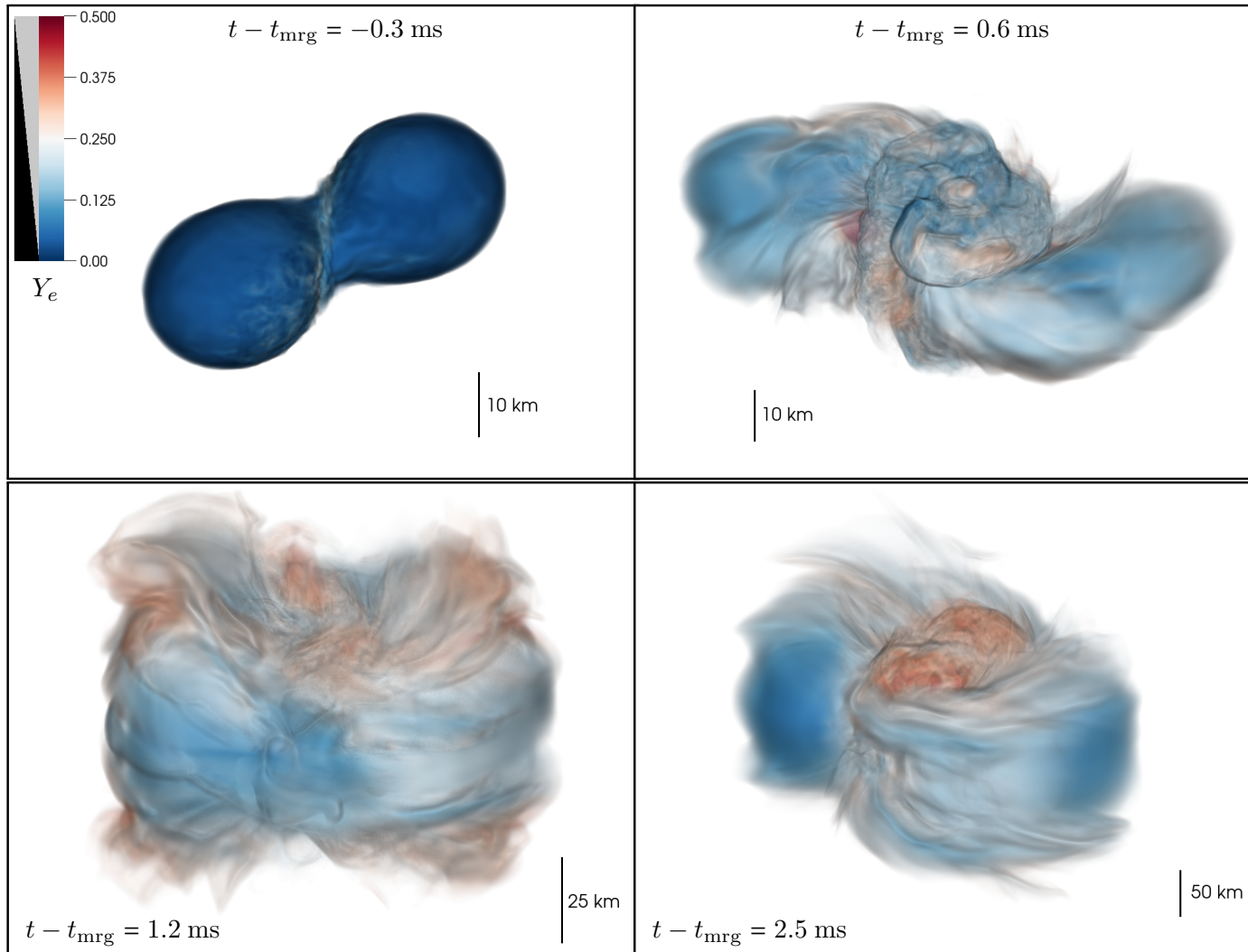# SciDAC4: Neutron-Star Merger Simulations

These state-of-the-art simulations are necessary to understand the **LIGO gravitational wave signals** from neutron star collisions

Such simulations are also essential to determine the **Origin and production of the heaviest elements of Nature**, such as Gold and Uranium.

Merger simulations enable the accurate extraction of fundamental information about the **Structure of neutron stars** and the **Nature of the nuclear force**.

Coupling simulation data with LIGO, space-based, and ground-based telescope data is key to **Realizing the full scientific potential of these National investments.**

Debris cloud formed in a neutron star merger. The color encodes the composition of the material.
Simulations and visualizations: David Radice (Princeton University and IAS)