

# Shock Breakout

2DSN1987a

• Chen W.-Y., Ke-Jung Chen, Masaomi Ono, 2024, ApJ, 976, 147

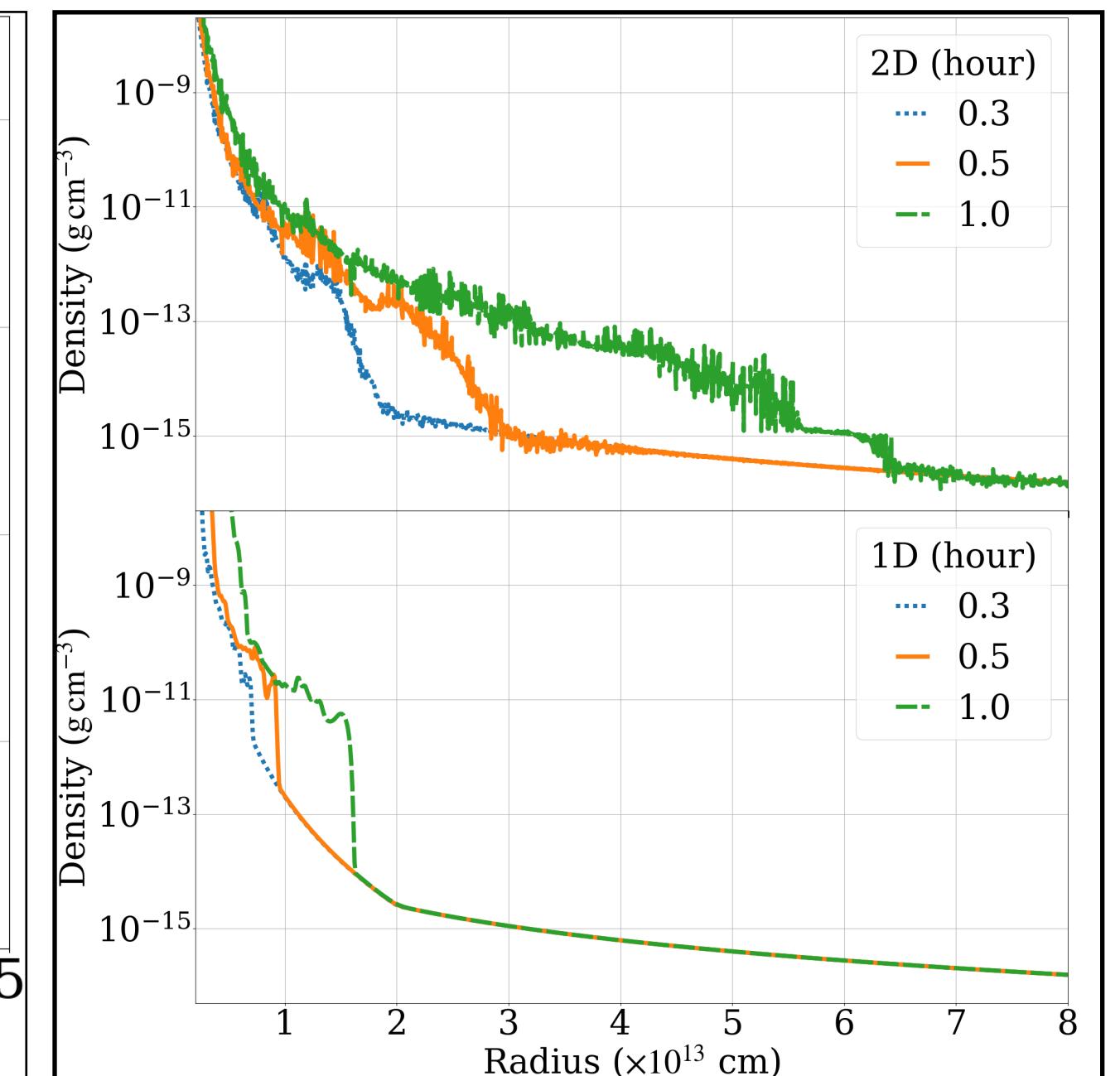
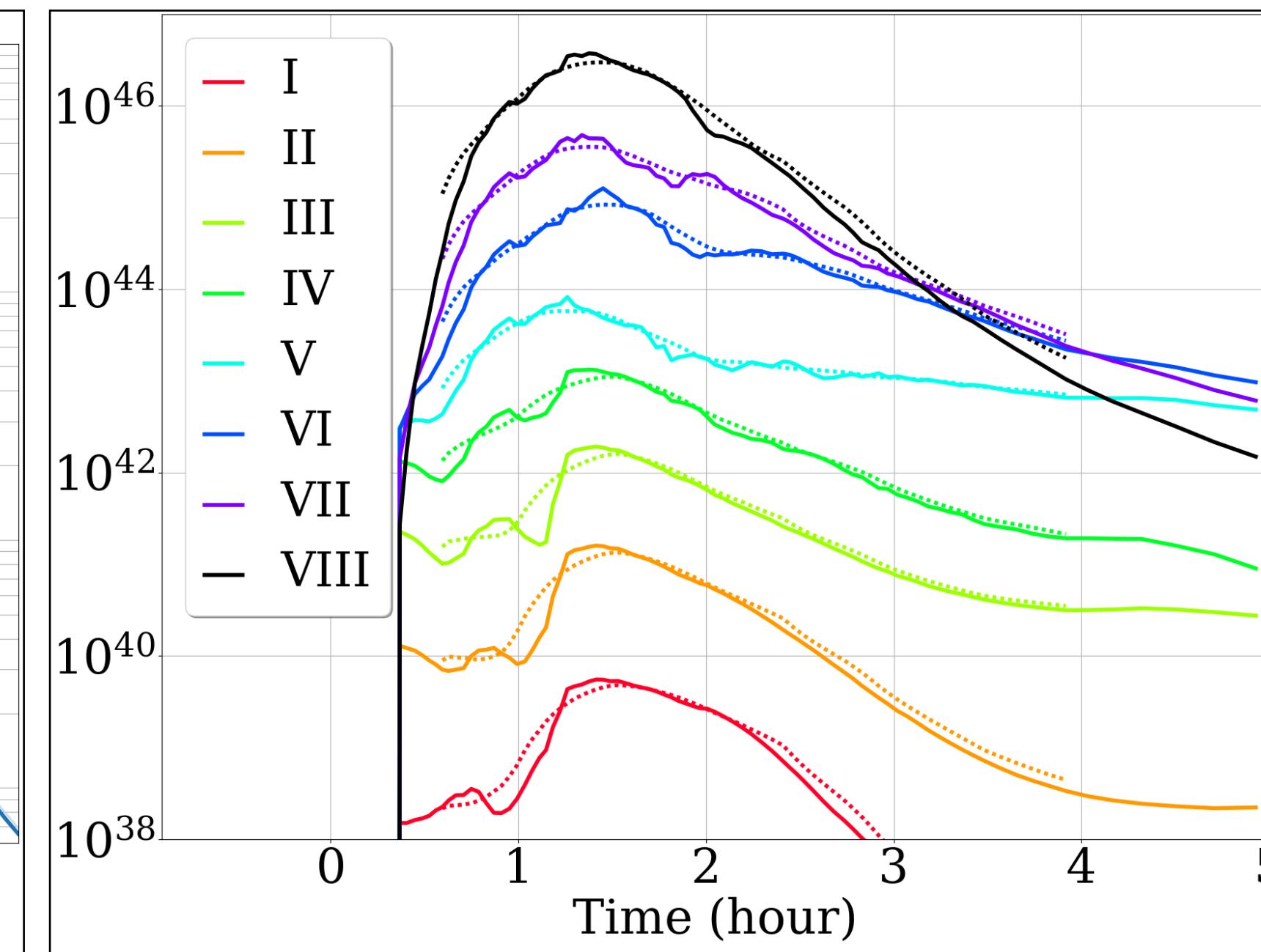
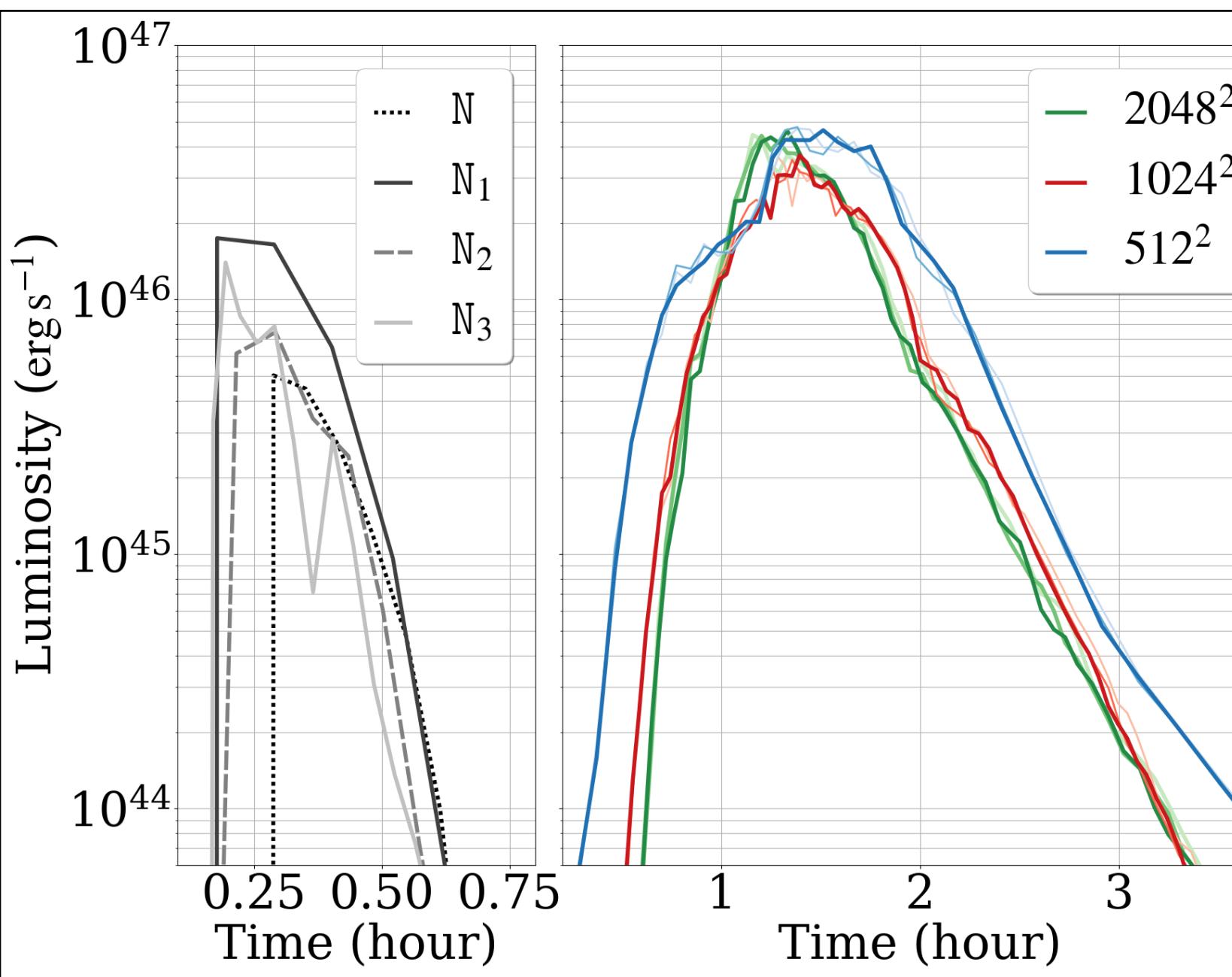
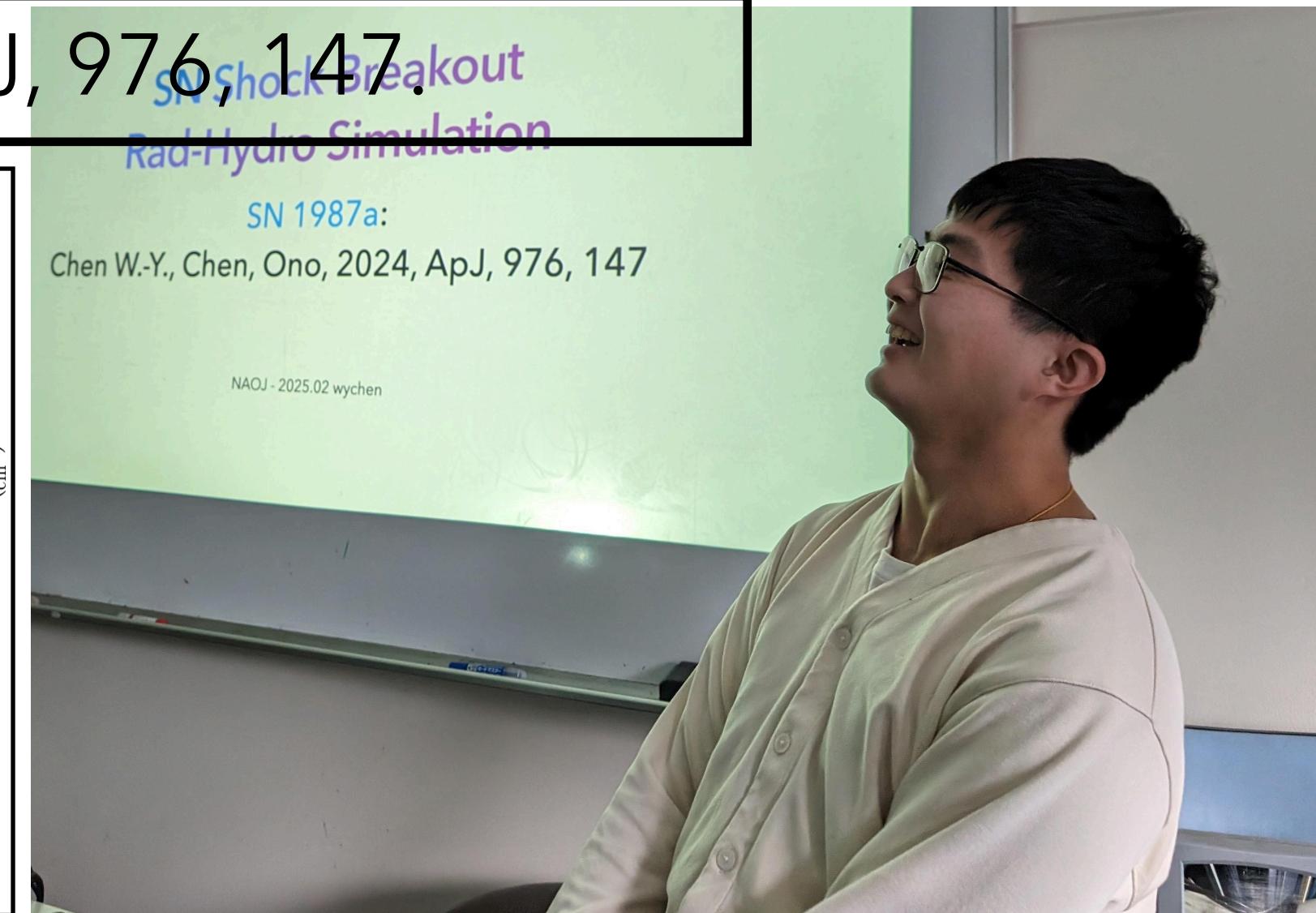
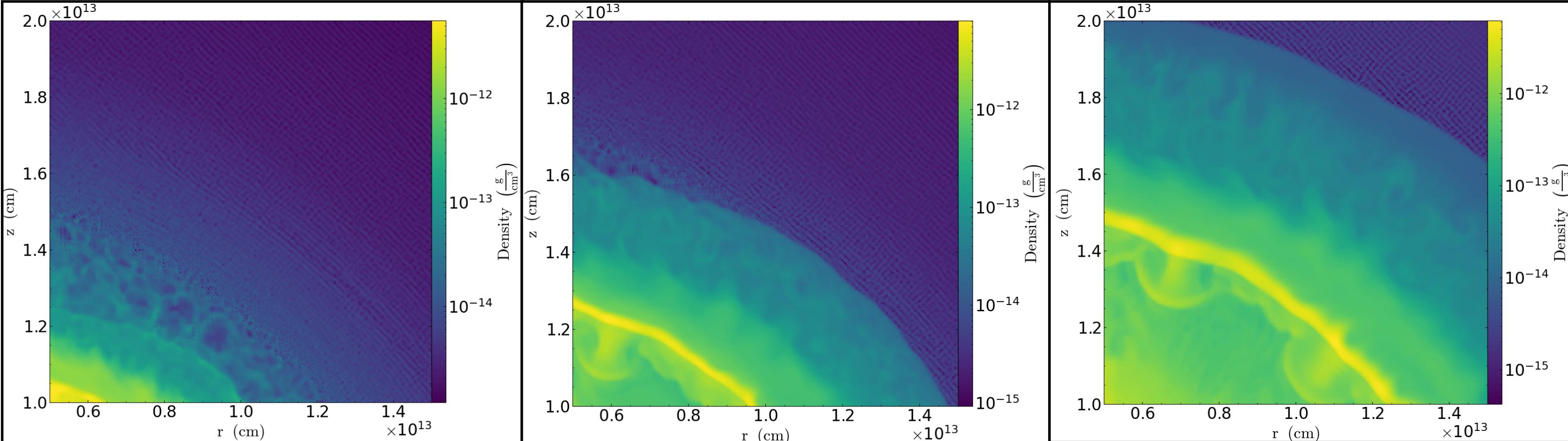
SN Shock Breakout

Rad-Hydro Simulation

SN 1987a:

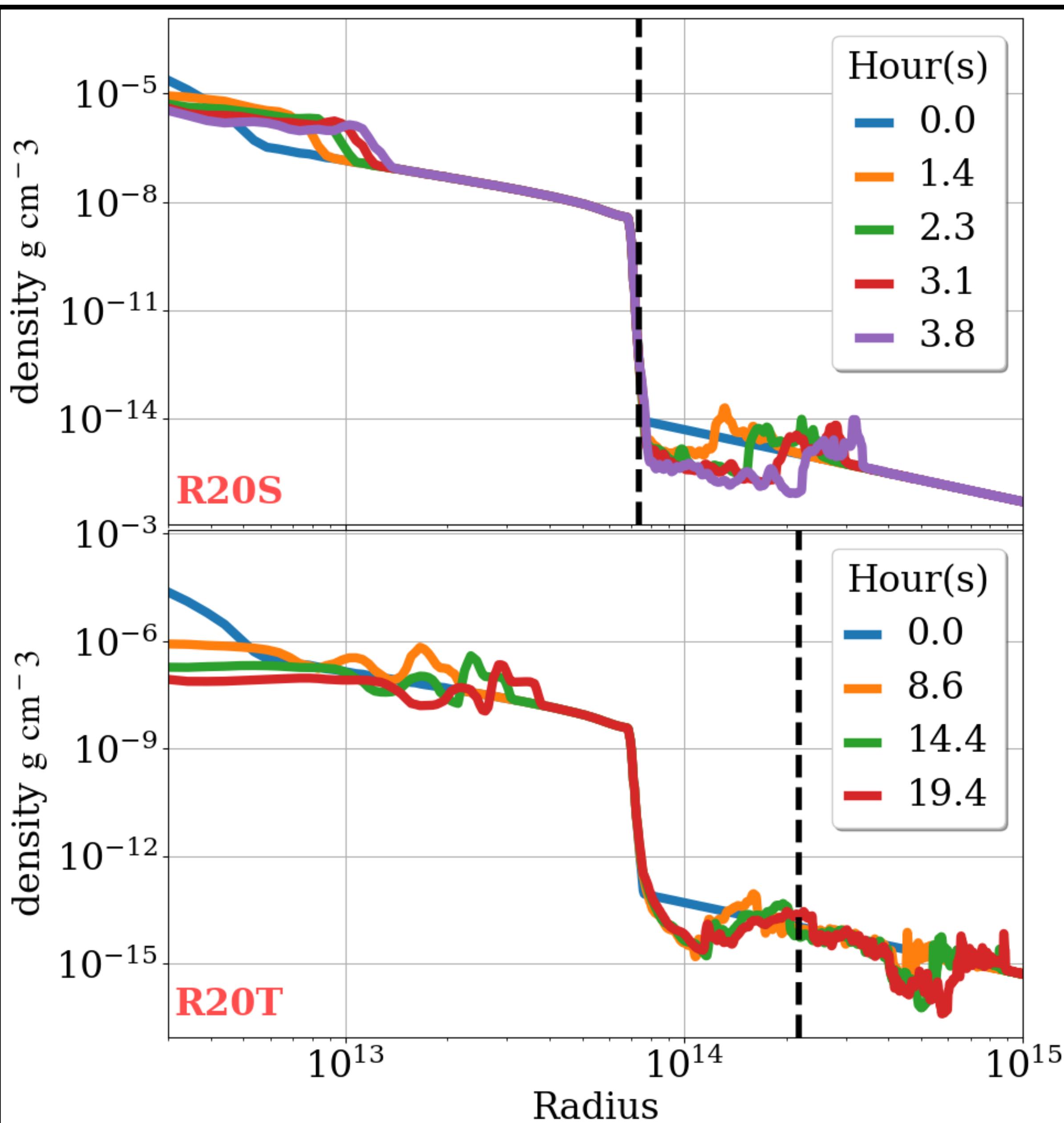
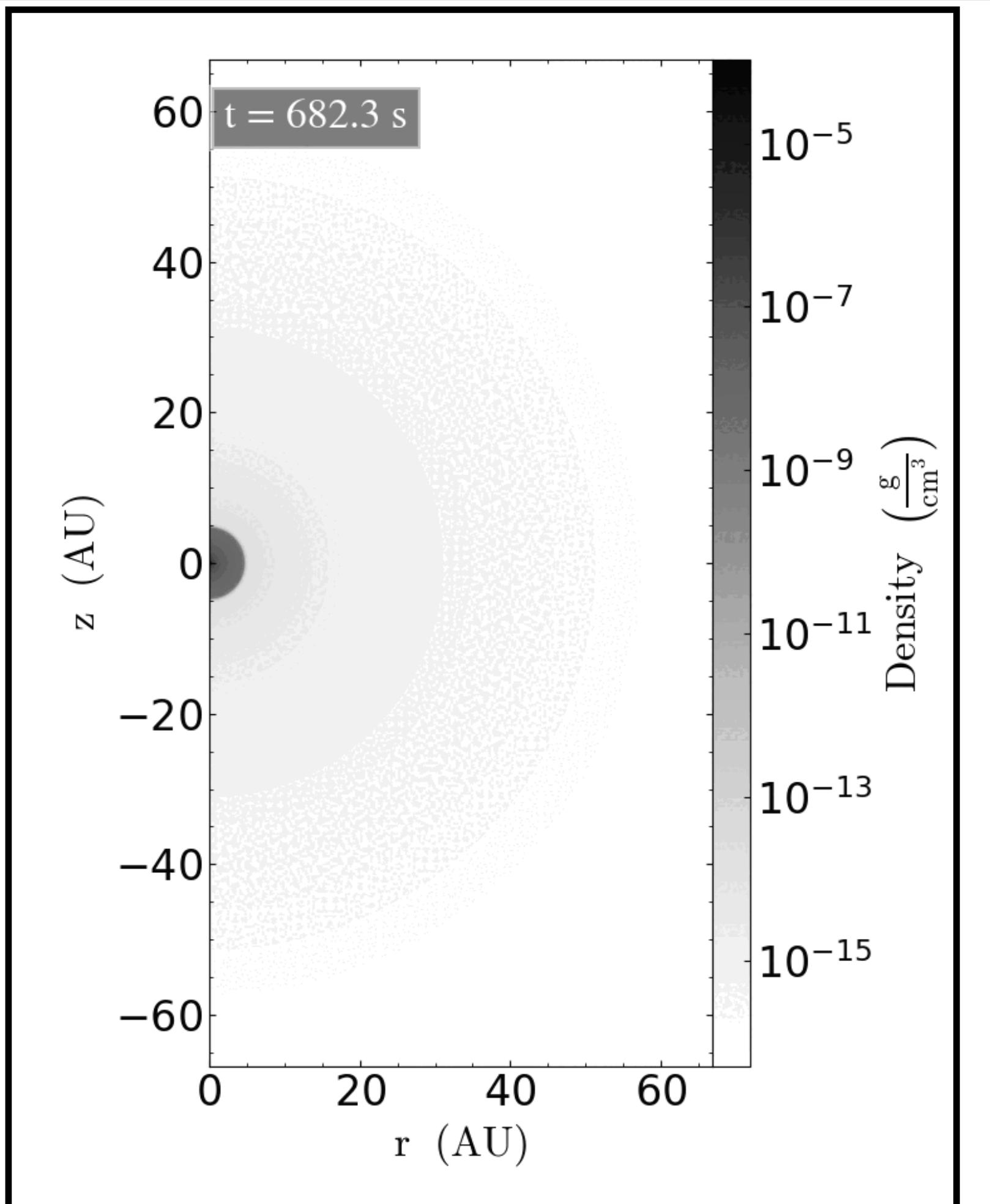
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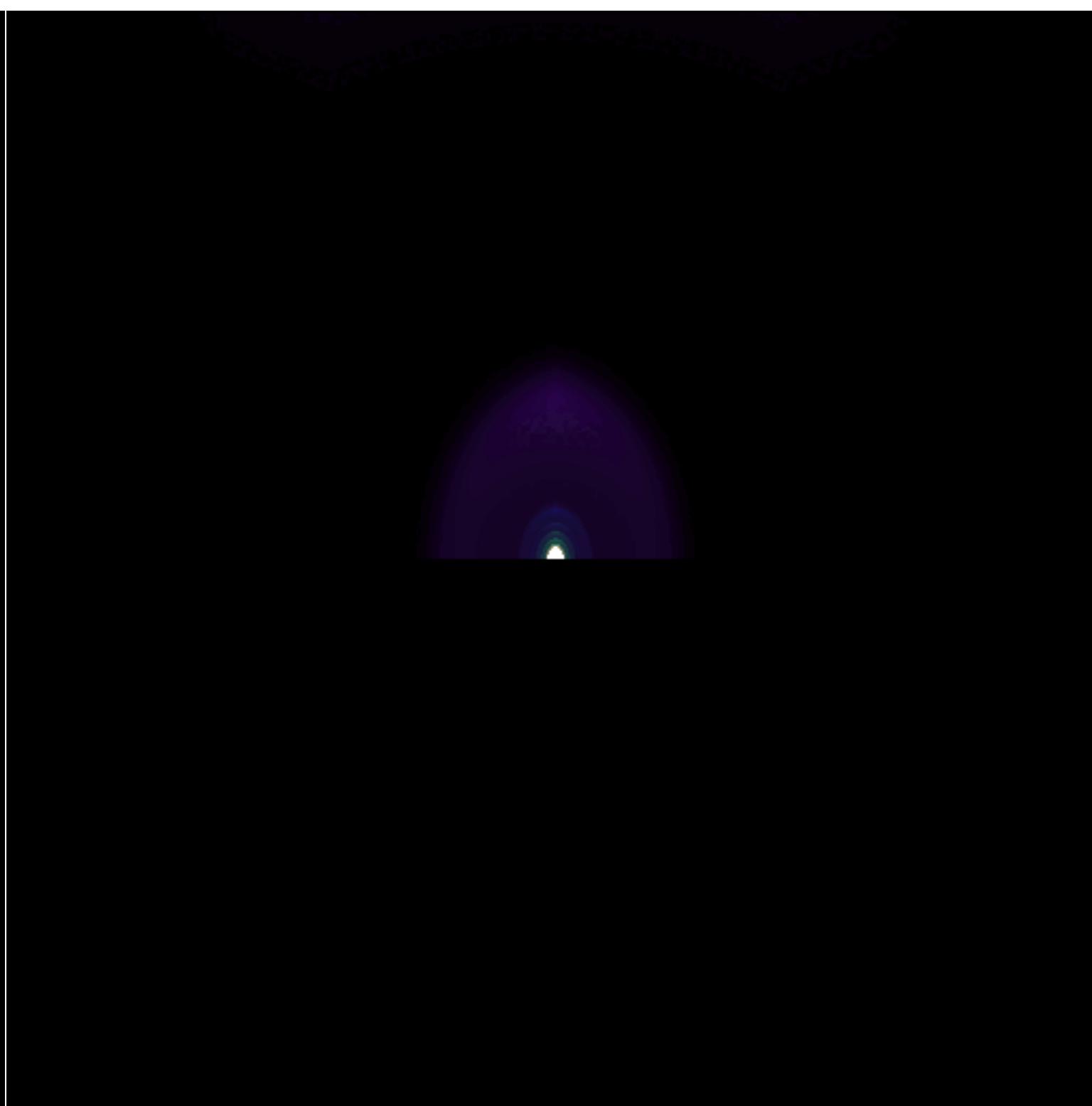
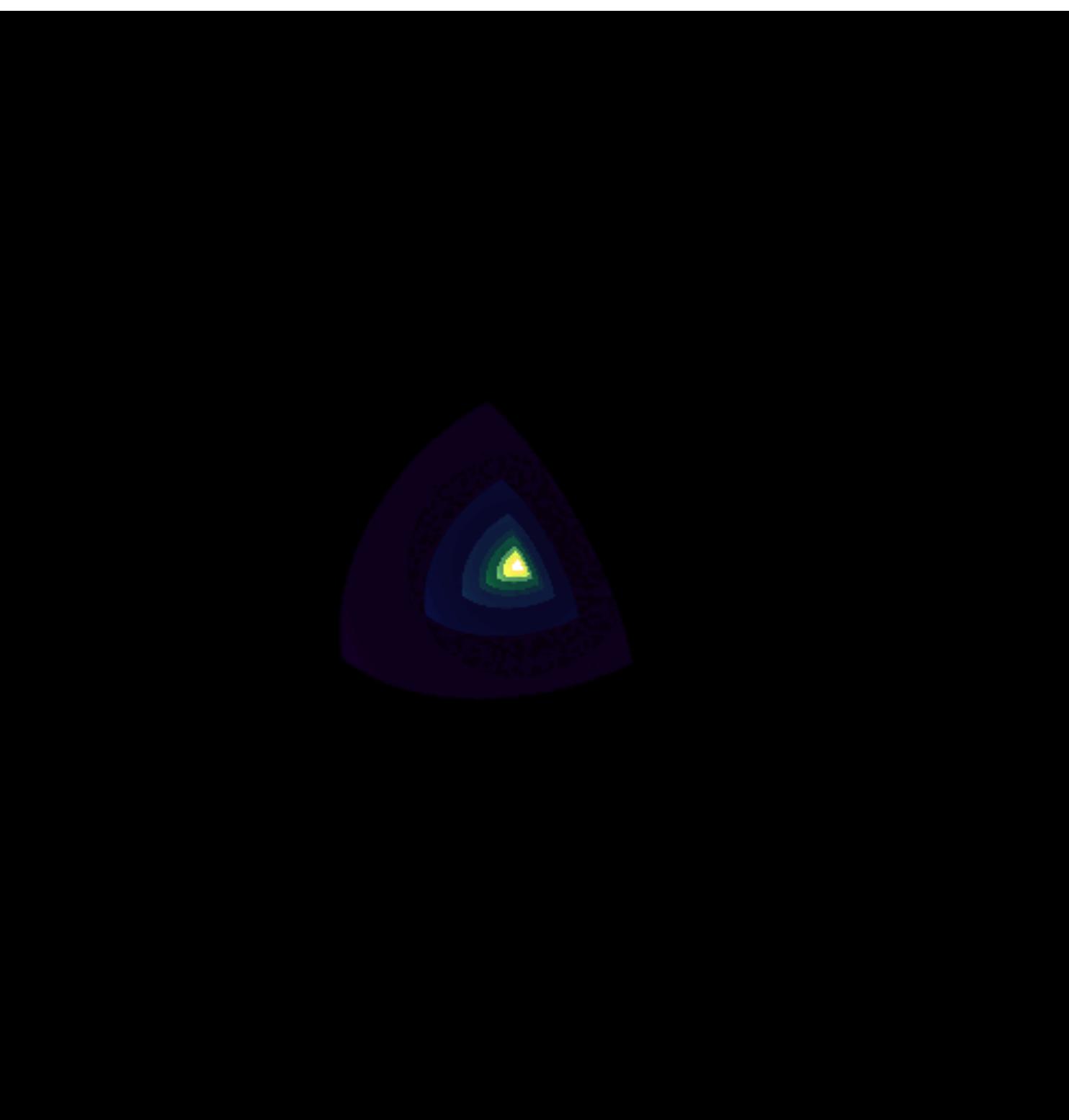
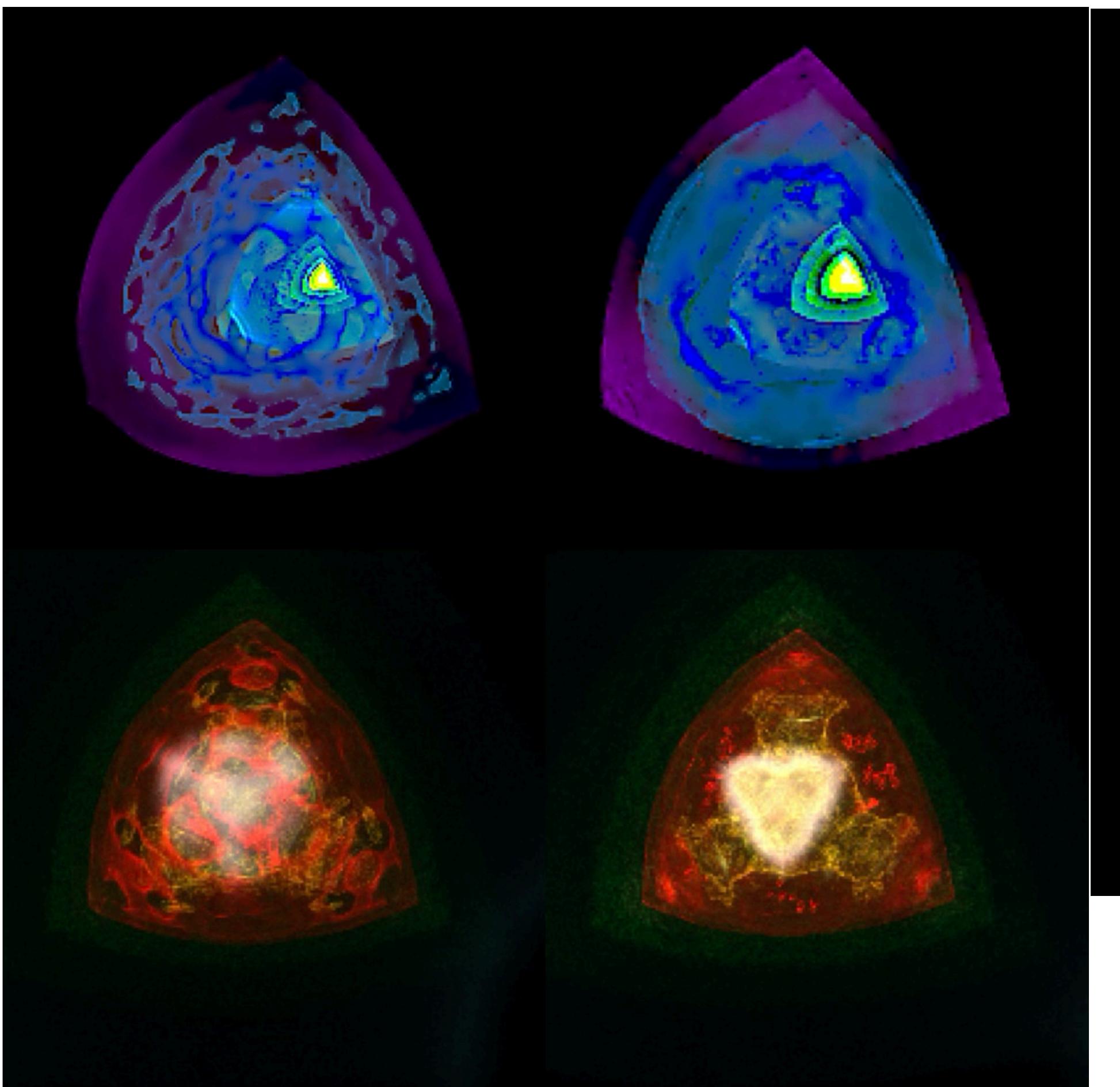
## 2D RSGs

- Thicker CSM -> Slower Radiation Precursor Shock
- Thinner CSM -> Closer to 1D estimation, but different emitting regions.



## 3DSN1987a

- 3D -> Bubbles ahead of stellar surface
- LCs -> Smoother than that of 2D



Density

Temperature