Astrophysical Objects

Active Galaxies - What type of AGN?

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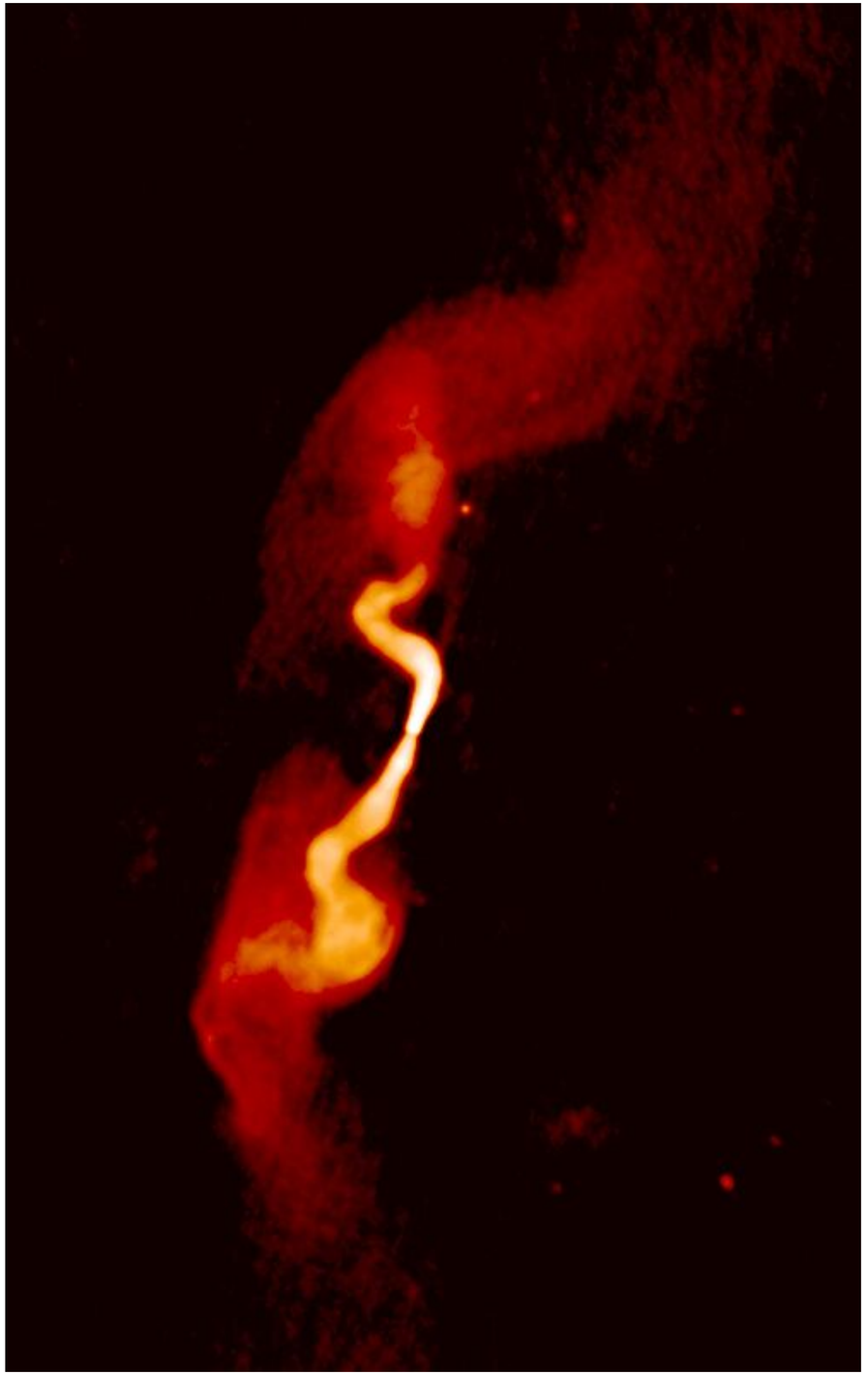
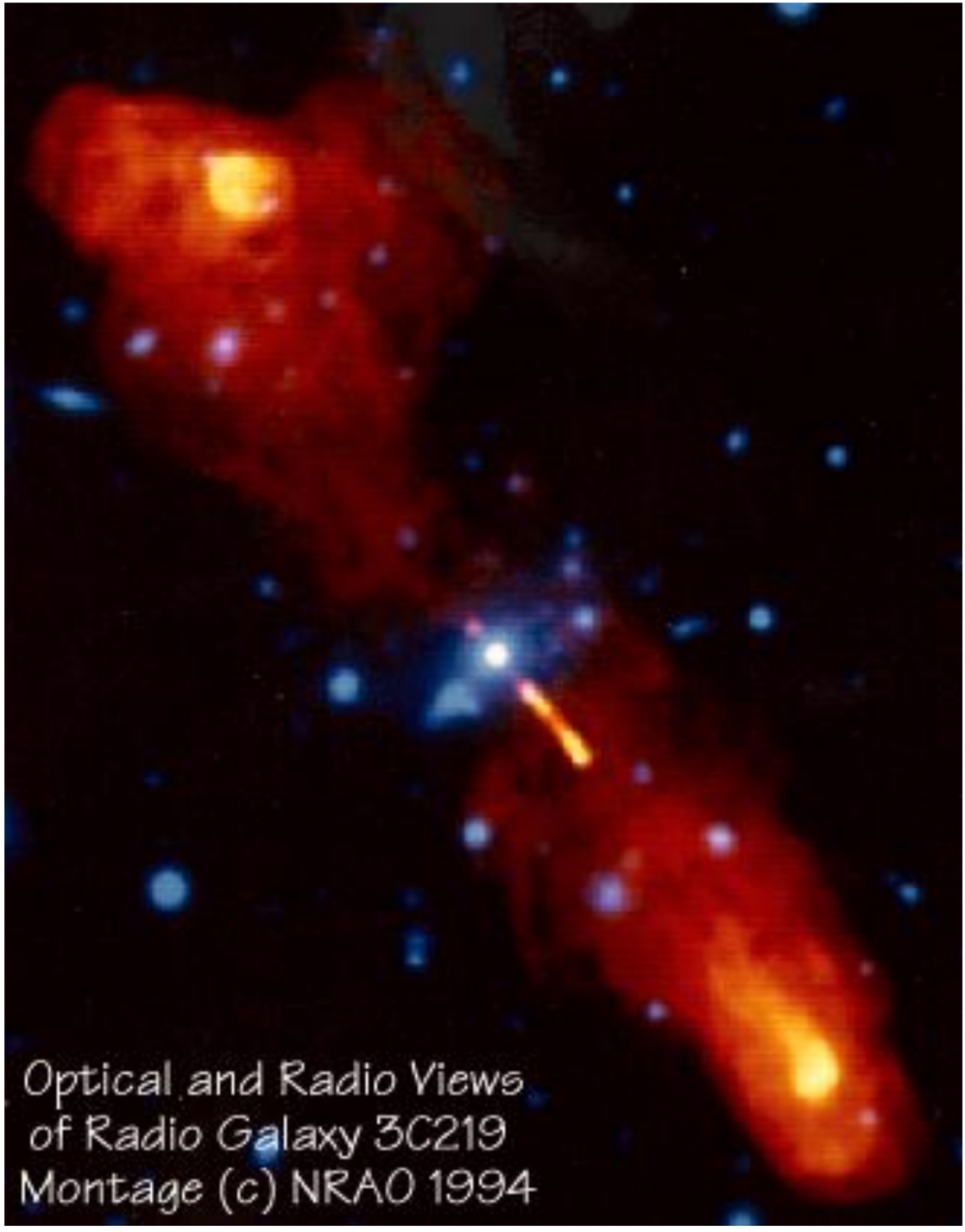
FRI or FRII?



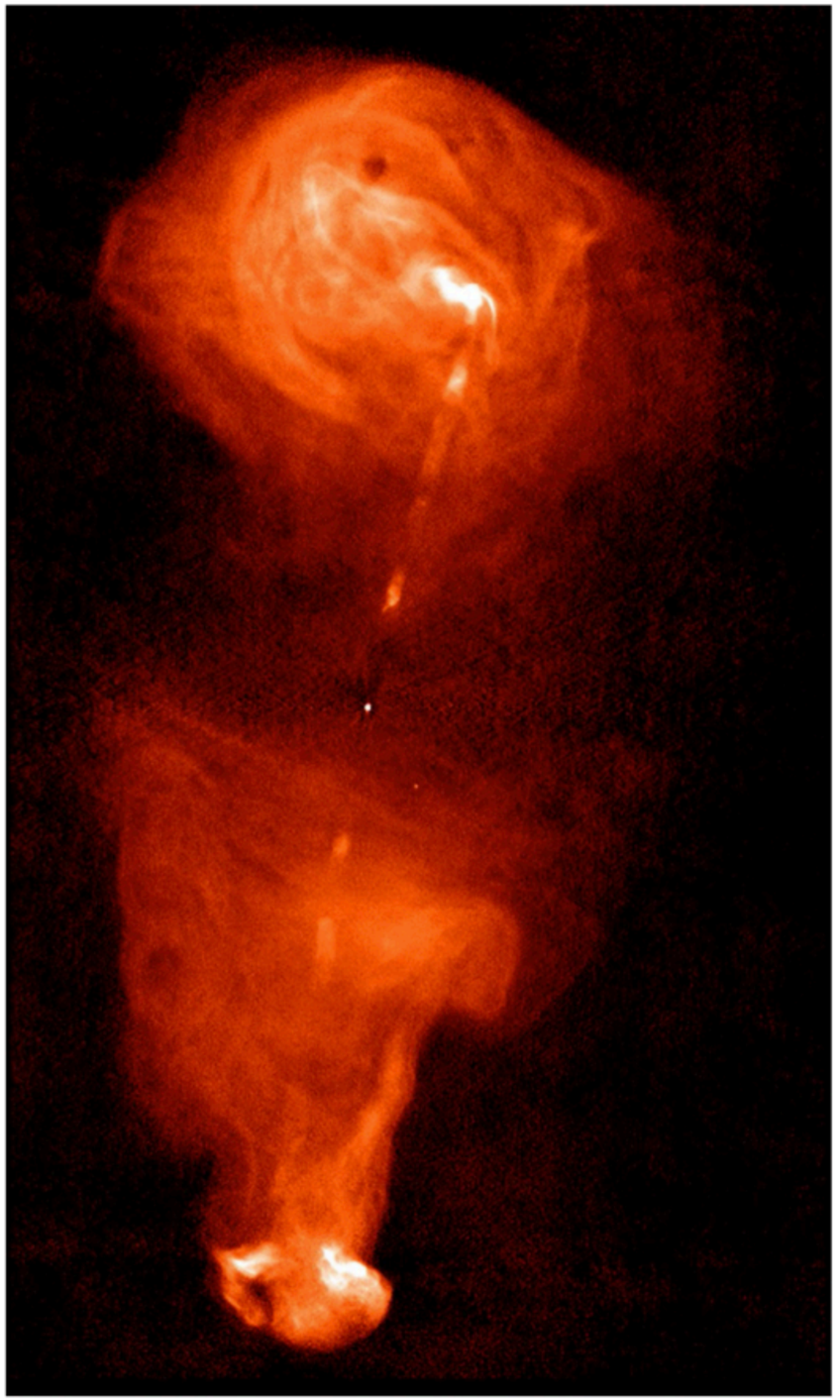
3C31 - FRI

FRI or FRII?



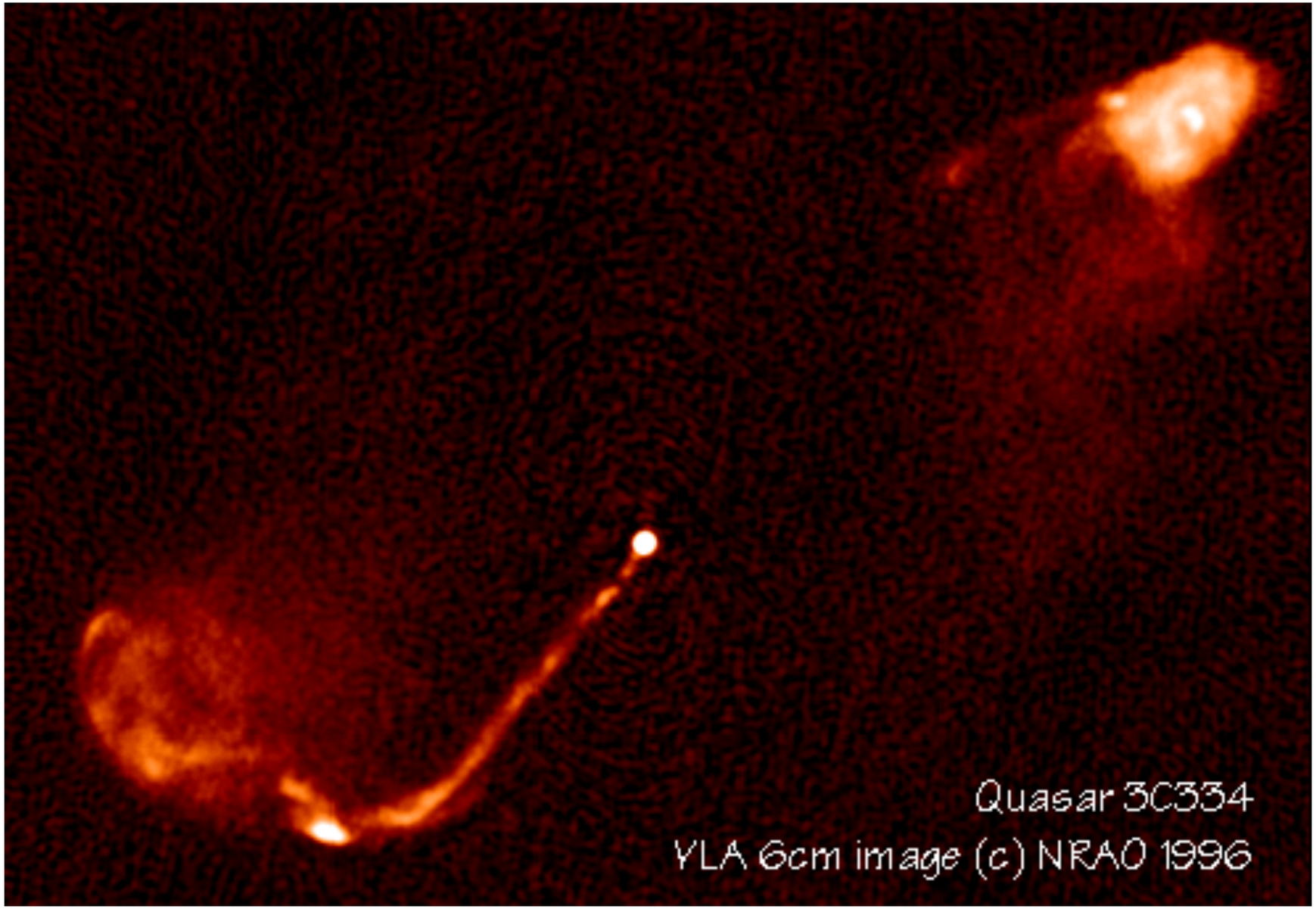
3C219 - FRII

FRI or FRII?



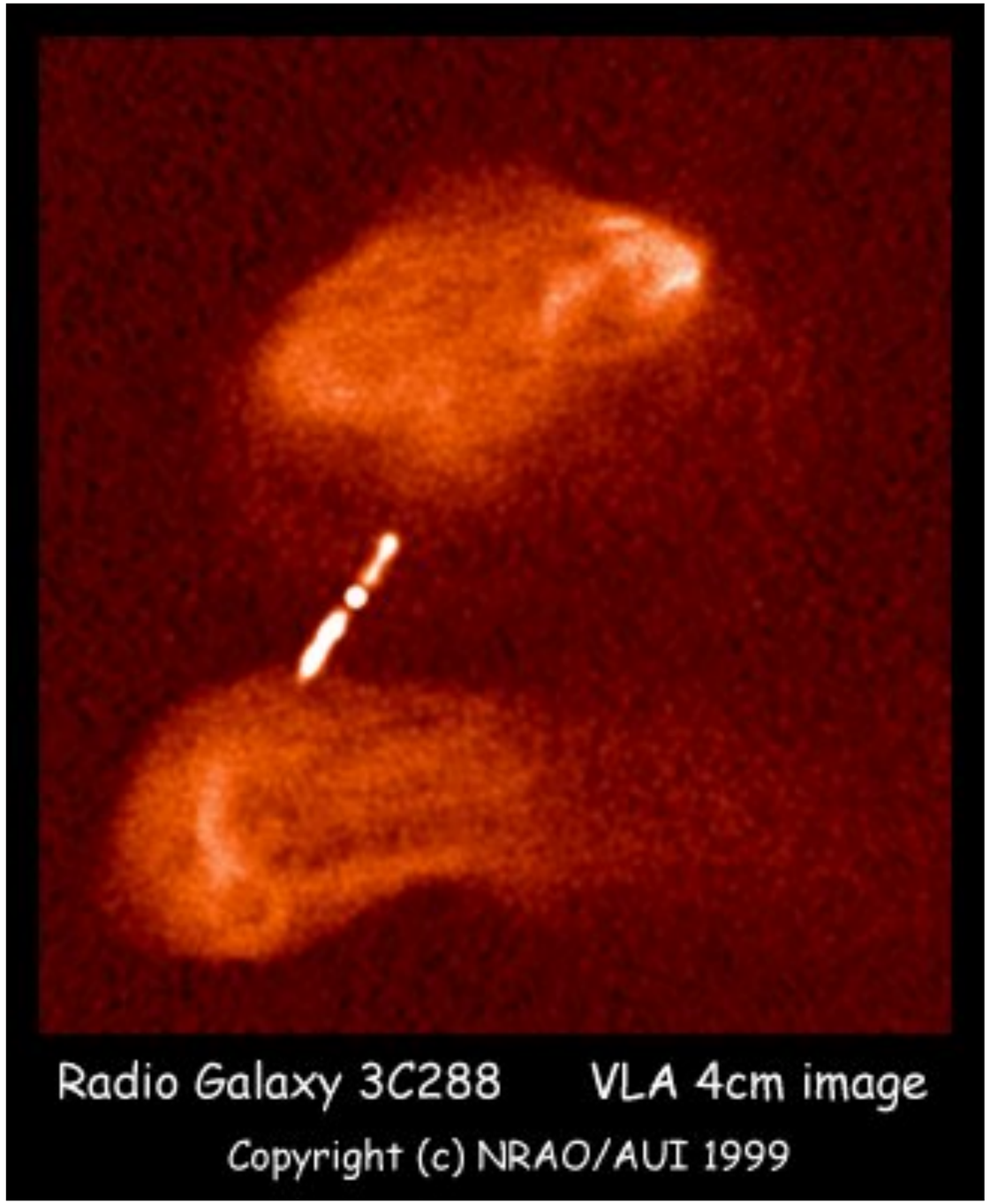
3C353 - FRII

FRI or FRII?



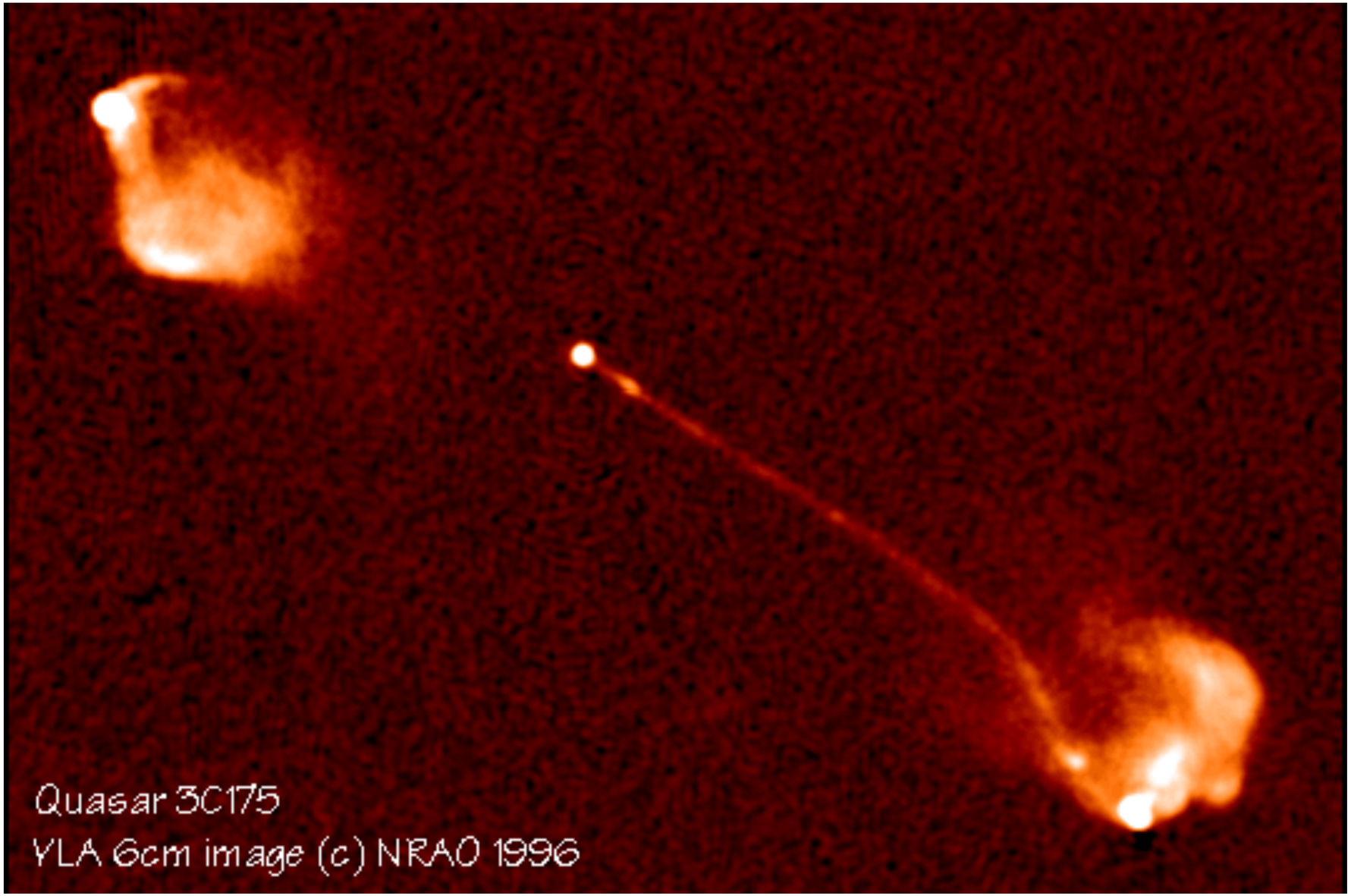
3C334 - FRII

FRI or FRII?



3C288 - FRI

FRI or FRII?

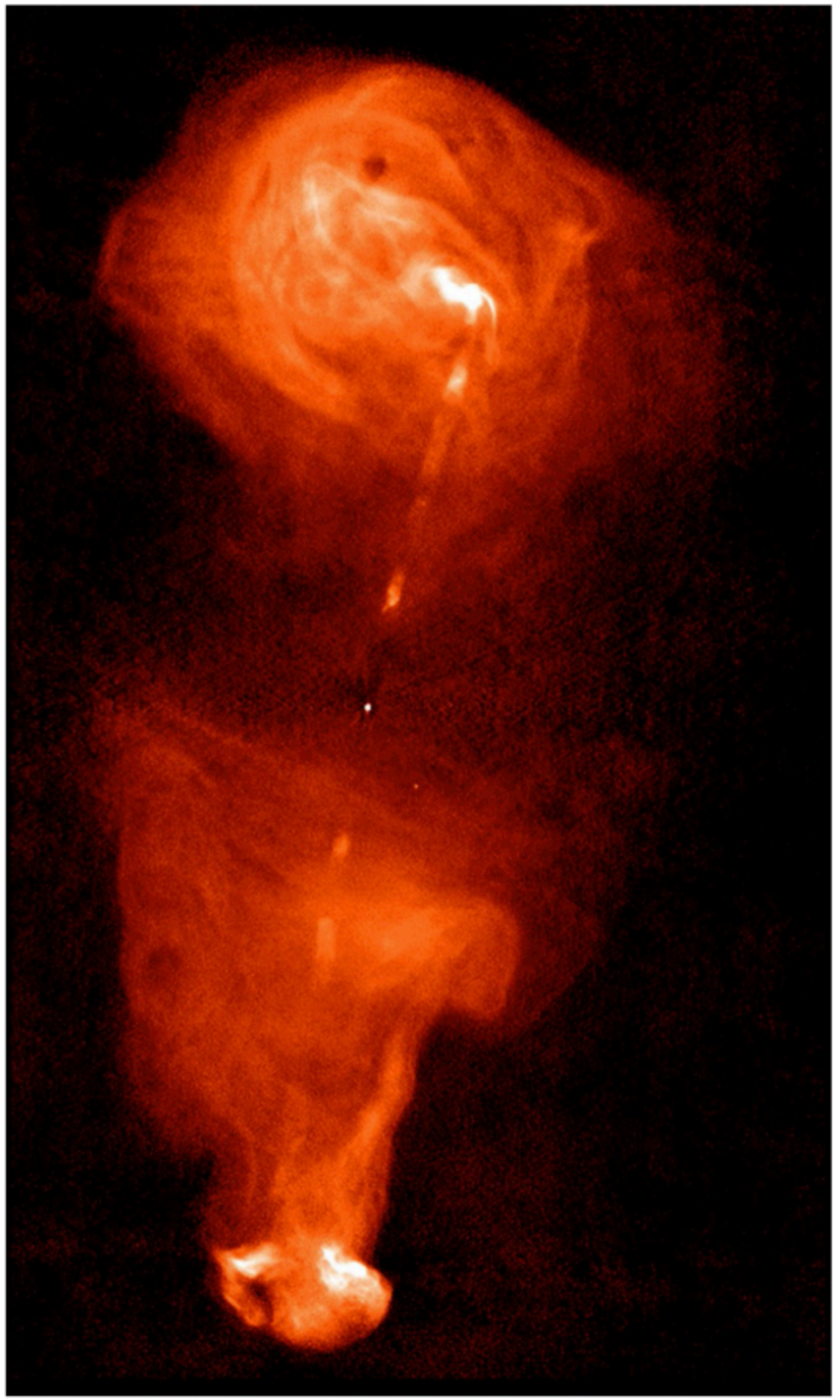


3C288 - FRII

FRI or FRII?

FRII radio galaxies

FRII (Fanaroff-Riley type II, see Fig. 1) radio galaxies are **edge-brightened**: FR II radio galaxies display **jets that are brightest at their leading edges,** in the regions furthest away from their host galaxy when observed at radio frequencies. **Jets** in FRII radio galaxies **are powerful** and are believed to maintain velocities that **are highly relativistic and supersonic** with respect to their surroundings. This results in the **highly focused jets** shown in the Figure. The brightening at their extremities is due to the presence of strong **shocks which mark the abrupt termination of the jet.**



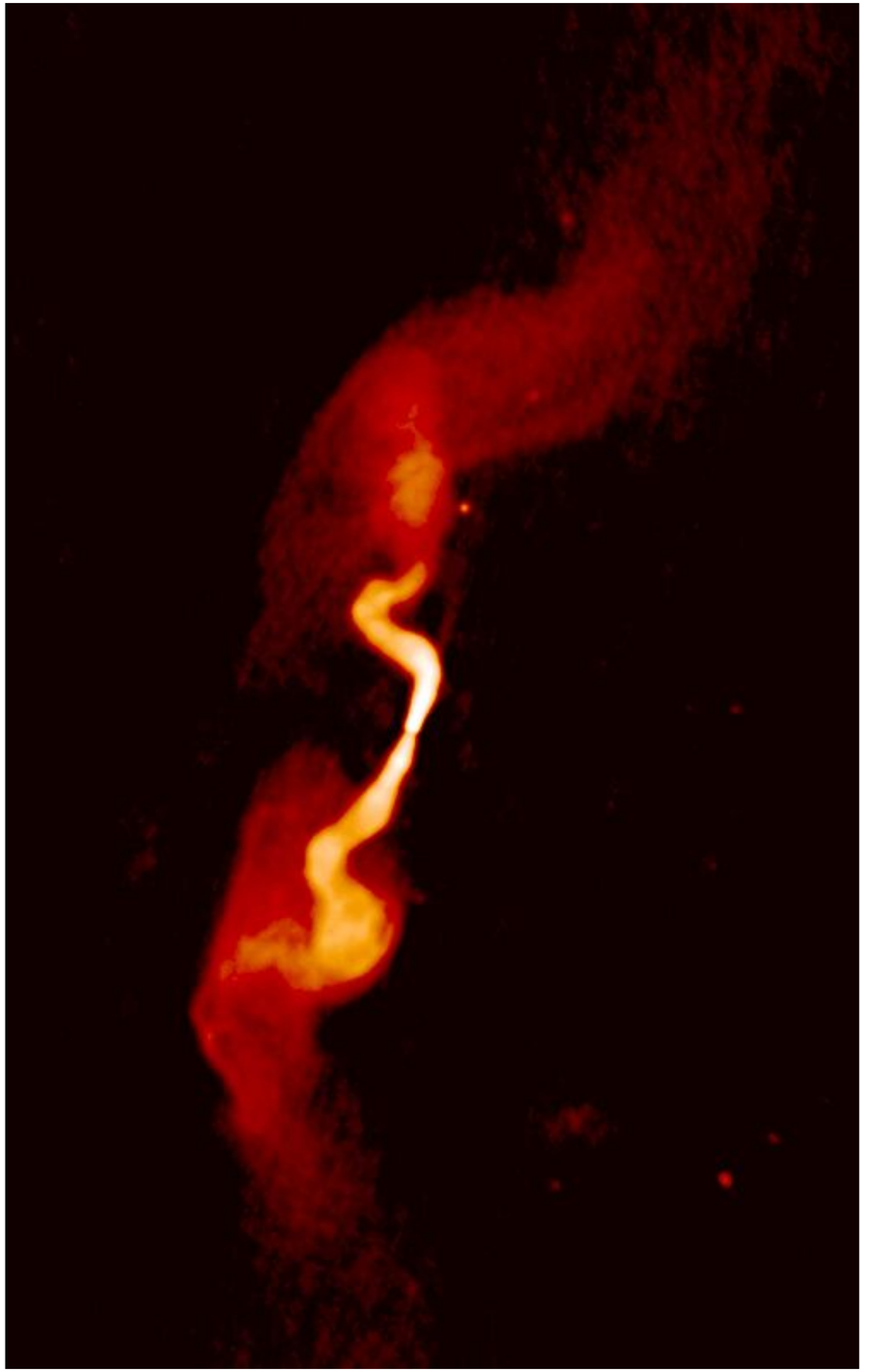
3C353 - FRII

https://www.seramarkoff.com/2021/02/the-curious-case-of-fr0s-the-relatively-new-class-of-radio-galaxy/

FRI or FRII?

FRI radio galaxies

FRI (Fanaroff-Riley type I, see Fig. 2) radio galaxies are **edge-darkened:** FRI galaxies have **jets that are brightest at shorter distances** from their host galaxy and are **dim at their leading ends.** Jets with FRI morphology are comparatively weaker than FRII **jets and are believed to decelerate to mildly relativistic, transonic or subsonic velocities** with respect to their surrounding environment. This results in **turbulent and disrupted jets that often display large scale bends and wiggles** as shown in the Figure. FRI jets do not terminate abruptly, but instead **smoothly transition into meandering plume** structures.



3C31 - FRI

https://www.seramarkoff.com/2021/02/the-curious-case-of-fr0s-the-relatively-new-class-of-radio-galaxy/