

1 Hardcastle

D.E. Harris *Question* With respect to spine and sheath. Should we not distinctly ‘see’ (spatially or spectrally) kpc scale spines in radio, for those sources for which spines are invoked for x-ray emission?

Answer In general, FR II jets on kpc scales are not resolved with the VLA, but there is some evidence of edge-brightening in a few sources, most notably 3C353 (Swain et al & see talk by Laing) which would be consistent with a spine-sheath model.

Herman Marshall *Question* If the sheath has $\Gamma \sim 1-2$, this it should be visible around the counterjet. How does one explain the lack of a sheath component on the counterjet side of 3C273, for example?

Answer I’d need to check whether the ??? of a counterjet in 273 is inconsistent with the beaming speeds estimated from the radio statistical analysis: if it is, then I think the get-out would have to be that 3C273 is clearly an peculiar object in many ways and it isn’t clear how to unify it with lobe dominated FR II sources