Subject: More general jet things
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I guess we need to think a bit about what to try next on the FRI jet front. [I haven't forgotten about the 3C31 large-scale paper, but some other projects need proposals and/or have a longer lead time for some other reason].

I talked to Chris O'Dea fairly recently about two ideas: modelling one or more of the sources in his UGC sample and putting in a better HST proposal. I'm not sure any of his sources are bright and straight enough to do well, but I haven't seen all of the images. I feel a bit queasy about this, as I wrote rather a rude referee's report on their proposal to get VLA data immediately before I saw Chris. [It wasn't a good proposal, and what irritated me was that they had gone out of their way to find the worst possible radio images of the objects from the literature - despite having observed the sources themselves some time ago. But still.]

On the other hand, it seems to me that we could make quite a nice proposal centred on getting better optical and near-IR data for the objects we have modelled. The new results on radio spectrum and X-ray jet emission, particularly for NGC315, would make a good case for trying to get the jet spectra. Plus we are still interested in the stellar light profiles close in, particularly if we can get conservation-law analyses for 0326 and 3C296 shortly, which I think is feasible.

I am dithering over the issue of straightening out the jets in M84 and NGC315. The reasons I think these sources are important are that we badly need another example of a source with jets propagating in lobes to see whether 3C296's low edge velocity is at all general, and that both sources have good enough X-ray data to contribute to the conservation-law analysis. M84 has the added bonus of being able to cross-check the jet energy flux against an estimate from X-ray bubble inflation.

I'm not quite sure how far out we have to go in NGC315 to be in the region where we expect the jets to reach pressure equilibrium with their surroundings (by analogy with 3C31 and 0326). Probably to 100 arcsec at least (recollimation completes by about 90 arcsec). That's almost to the distance that the edge jet/counter-jet sidedness ratio < 1 on both edges, so modelling is getting very ropey. We'll also need XMM to trace the larger-scale gas distribution. For M84, we have a slight bend close to the nucleus to fix, but deceleration and recollimation must be quite close in.

Adding M84 before doing a "compare and contrast" might be risky (I'm not sure how much effort would be needed to image and model it - all

the data exist, but you can never reduce things to a routine). On the other hand, it would be nice to have another model, and especially a conservation-law study. 1553 is probably hopeless for the latter. I'm pretty sure M84 is the only other source with enough data in the VLA archive.

My next uncertainty concerns 2D adiabatic models. How useful is it to try this for sources other than 3C31? Is the rather rough-and-ready analysis of particle injection in the flaring region worth repeating for other sources? Should we just try to fit after recollimation? Some of the coding required is a bit intricate.

So, what do you think about the following:

- HST proposal (to include M84? 1553?)
- Trying to model M84
- Debending jets to get further out
- When to try to summarize
- Importance of adiabatic models
- Other sources to try (given the EVLA antenna issues)

At some point, unless I junp ship, I'll almost certainly end up buried in ALMA commissioning, which is concentrating my mind on unfinished business. It would be good to talk over these issues in person, but I'm not sure when I'm next likely to be in CV.

Cheers

Robert