Subject: **Double peaked lines**
Date: Thu, 16 Dec 1999 17:16:32 -0500 (EST)
From: Chris Palma <cp4v@superfly.astro.virginia.edu>
To: Alan Bridle <abridle@NRAO.EDU>
CC: fbauer@NRAO.EDU, bcotton@NRAO.EDU, srm4n@superfly.astro.virginia.edu, cls7i@superfly.astro.virginia.edu

Hi all.

Following up on the Axon et al. reference in Nature, I found the following reference:

Taylor, Dyson, & Axon, 1992, MNRAS 255, 351.

In this paper, they propose a model where the jet drives a bow shock into the ambient medium. They actually derive the resulting [OIII] 5007 profile as a function of inclination of the radio jets to the line of sight. For a jet entirely in the plane of the sky (phi=90), they have a symmetric profile, and for decreasing values of phi, the blueshifted component appears wider and with a smaller peak for certain of their models. This is exactly what I find when measuring the line profiles for NVSS 2146+82.

However, this model does assume that the NLR emission occurs due to photoionization of the shocked gas by the UV nuclear continuum. If I remember from colloquia last Spring, this is not the preferred model for the NLR, is that correct?

I have not had a chance to read and digest this entire article. I skimmed it and read a more recent article they wrote where they cite this model paper to explain some narrow band optical imaging results for Seyferts. It seems that this paper does adequately address the referee's comments in that their model as a function of angle to the line of sight predicts a double peaked line profile of the shape we find for 2146+82 at an angle that seems reasonable based on the radio morphology. We can cite this and maybe reproduce the model that best fits the 2146+82 line profiles we measure. Does this seem reasonable to everyone?

--chris

Chris Palma, cp4v@virginia.edu	The preceding was a work of fiction,
University of Virginia Astronomy	any similarities to persons living or
	dead, places, or events is purely
www.astro.virginia.edu/~cp4v	coincidental...

Subject: referee's report for 2146+82 paper
Date: Tue, 14 Dec 1999 15:55:53 -0500 (EST)
From: Chris Palma <cp4v@superfly.astro.virginia.edu>
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Hi all.

I received the referee's report today for the NVSS 2146+82 paper. The comments are brief, and it appears that only 1 or 2 of the comments will require much work to address.

I will fix the English/typo problems (points 1&6). I thought that I had already addressed point 2 fairly well, I downplayed some of my enthusiasm for a "rich group" and cited a few references that have found (1) that a few other giants appear to be in rich groups and (2) that the X-ray emission from groups containing FR IIs is at the low end of the distribution for groups in general. I can try and make that more clear.

For point 3 we stated at the outset that Giants were simply defined (arbitrarily by us) to be larger than 2.0h^-1 Mpc. I'll see if that needs to be made more prominent.

I think point 4 can take as much or as little work as we'd like. I didn't devote much analysis in the paper to the double peaked lines, but perhaps we should reconsider this. Generating some zero order models including orientation effects shouldn't be too difficult.

Any thoughts on how best to address point 5 are appreciated.

Any other thoughts?

--chris

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This is an extremely well written paper with substantive content and I recommend its publication in the Astronomical Journal. I include the following ideas that the authors might wish to consider in their final revision.

1. English on page 5, just prior to the numerical listing is a bit strange (the sentence leading to the colon).

2. I found the discrepancy between the x-ray and optical measure of the environment surrounding the radio galaxy a bit confusing. It seemed to suggest to me that the optical measure was an overestimate. Are there other instances (other sources/clusters) where there is such a large discrepancy and how has it been resolved?

3. Page 23, Section 5.1.1. I am not sure what the definition of a Giant Radio Galaxy class is? Is it set by physical size? Is there a suggestion that radio source size is anything but a continuum and you are just sampling the large end. This could be clarified.

4. There was not alot of comment on the double peaked emission lines in the paper in an astrophysical context. It must surely be interesting to consider orientiation effects here; the giant radio galaxies must be essentially in the plane of the sky and hence any disk of gas which might give rise to double peaked lines would have a particular orientation. It might be worth looking into the models for these doulbe peaked lines and considering if there is any lesson to be learnt. Somehow I remember that some of the double peaked lines might have been in broad line radio

galaxies which are suppoed to be along our line of sight.

5. The idea of the variable injection spectrum for the extra flat regions is interesting. Was unclear to me if the details had been worked out. These regions would have to remain coherent (spatially) on very long timescales. Is that feasible? Are there other possible explanations.

6. There was a small typo in the abstract. 20'from (no spaces).

a fine paper overall...

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