

GENERAL DISCUSSION FOLLOWING PAPERS ON RELATIVISTIC BEAMING

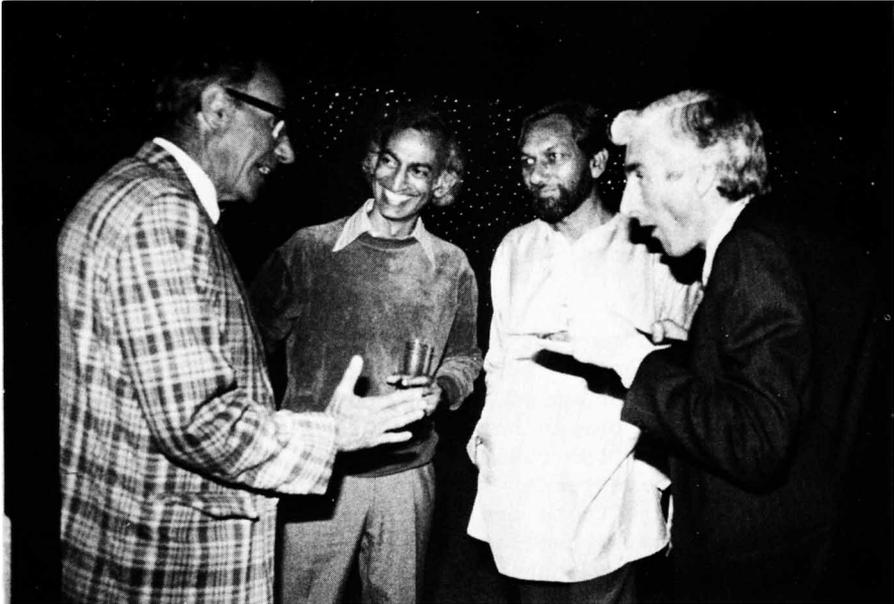
Burbidge : What type of observation would lead you to abandon the relativistic jet hypothesis ?

Blandford : This is a serious question to which I will try to give a serious answer (cf. proceedings at Manchester conference on AGN). My view is not that there are potential observations that absolutely disprove the relativistic beaming hypothesis but instead that there are observations of specific sources that are more naturally explained by alternative models. Three examples include :

- i) Sources in which the flat-spectrum core moves and the steep spectrum jet is stationary (relative to a background point source).
- ii) Well defined expansion speeds in excess of 100 c in quasars.
- iii) Prevalence of expansion speeds $>10c$ in steep spectrum radio galaxies and quasars with central jets well aligned with the extended structure.

Kellermann : It seems to me that the issue is not whether relativistic beaming is important, because as we have heard the evidence from superluminal motion and the absence of inverse Compton flux is overwhelmingly in favour. However, some people have tried to explain a wide variety of other phenomena purely on the basis of geometric orientation, and what we have heard today and yesterday suggests that things are not that simple, and that intrinsic effects are also important. But we should not minimise the importance of these attempts at unification, because they have served to focus much of the research that is being discussed here.

Blandford : I wish to make a comment concerning some of the tests of the beaming hypothesis. They are predicated on what I regard as an overly simplistic model of the emission - viz. that there is a stationary ballistic outflow. In such an outflow, the electron losses should be catastrophic unless there is "in situ" acceleration. Now, the most natural way to effect this acceleration is to pass through a shock front. Shock fronts change the velocity of the flow both in magnitude and direction. They therefore change the beaming pattern. (The velocity of the shock front itself, which may appear superluminal, will be different again.) I therefore argue that realistic models of radio emission from compact jets will not give the flux distributions with angle that some of these investigations have been testing. Relativistic beaming is such a strong amplifier that we may be "blinded" by a relatively insignificant part of the source coming towards us.



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