DISCUSSION ON THE PAPER BY **FEREZ-FOURNON** AND **BIERMANN** (p.405)

Kundt : Every TV-set is a counter example to in-situ acceleration; which is an assumption, not a must.

Cowsik : The observations on jets and knots for eg. in M87 and in 3C273 do not compellingly support models with in-situ acceleration. A relativistic plasmoid moving with bulk speed of $\gamma \simeq 10$ can also explain the observations. (cf. Cowsik et.al. Proc. International Cosmic Ray Conf. 1983, Bangalore, Eds. Ramanamurthy et.al.)

Blandford : Did you use an energy independent diffusion coefficient ? If so this might be rather unrealistic.

Perez-Fournon : I used a momentum and position - independent diffusion coefficient. This is possibly unrealistic but it is the best you can do as a first approach to the problem.

DISCUSSION ON THE PAPER BY **COWSIK** AND **LEE** (p.407)

Rees : Is this paper similar to the earlier work by Blandford and Payne ?

Blandford : Yes, similar in spirit, though Cowsik and Lee considered photon acceleration at a spherical shock front whereas Payne and I computed the emergent flux for a smooth spherical inflow.

DISCUSSION ON THE PAPER BY **ANDERSON** (p.409)

Rees : Does your estimate of efficiency depend on any assumptions about the radiation mechanism ?

Anderson : The "efficiency" of the models is the maximum possible efficiency - that is, the energy dissipated as a fraction of the rest mass energy. The models do not take radiation transport into account. Whether all the dissipated energy can escape the disc will depend on the actual radiation mechanism and the disc geometry.

DISCUSSION ON THE PAPER BY **COLEMAN** (p.421)

Rees : Self-absorption must occur in your model at sufficiently low

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frequencies (unless you invoke stimulated emission effects arising from anisotropic pitch angle distributions or cyclotron maser action in the comoving frame). Is this always at sufficiently low frequencies that you can ignore it ?

Coleman : It is likely that synchrotron self-absorption is responsible for low frequency turnover in regions of particle acceleration, where the pitch angles are presumably isotropic. Under the conditions which I consider here, however, the strong fields and small average pitch angles promote the cyclotron turnover to well above the self-absorption frequency. It is easy to check that the kinetic temperature of these streaming electrons is far higher than the observed brightness temperature, and hence the source is optically thin.

Peacock : Do you think your particle streaming model provides a good explanation of the occurence and statistics of superluminal motion ?

Coleman : Yes. In a field dominated plasma the Alfven velocity is relativistic, and particles (e^+,e^-) may stream at this velocity. It is then natural to consider the superluminal knots as regions of enhanced relativistic particle number density, which propagate along the field lines at a high Lorentz factor. If the field lines occupy a large solid angle, superluminal motion may be observed far more frequently than is implied by relativistic ejection along a single axis. The model avoids the necessity for bulk relativistic flows of a proton dominated plasma.

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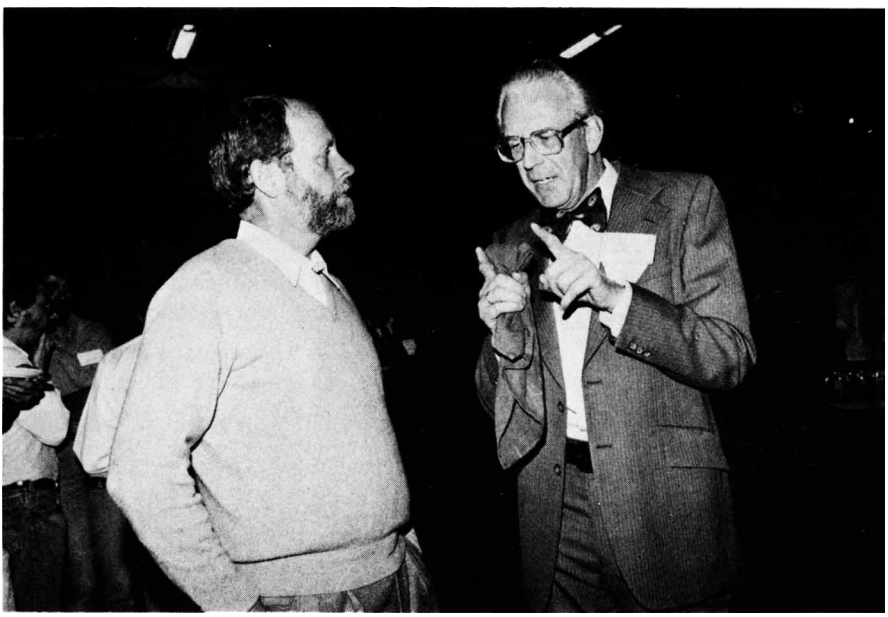

Joe Wampler and Maarten Schmidt arguing about quasar evolution?

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