2. What are the (optical and infrared) spectral energy distributions and how do they vary across the galaxies? How do the morphologies differ from those of low-redshift radio galaxies and normal giant ellipticals? What do they tell us about the populations (and ages) of the stellar components? This aspect will benefit considerably from the complementary theoretical input to the project by the Institut d'Astrophysique, Paris.

3. How are the morphologies of gas, stars and relativistic plasma related? Are they clumpy? If so, on what scale, and are the clumps related to galaxy formation?

4. What are the dynamical properties of the gas in the $z > 2$ galaxies and what constraints can be placed on the masses of the various components? How do they differ from the dynamical properties of low-redshift radio galaxies and normal giant ellipticals?

5. What is the mechanism for the optical/radio alignment effect? Is the presence of the alignment connected more with the high redshifts of the 4C sample or with their large radio luminosities?

6. How do the properties of intermediate-redshift radio galaxies differ from the properties of nonactive galaxies in the same clusters? Are additional galaxies detectable close to our $z > 2$ galaxies? Neighbours might be expected if our objects are located in forming clusters or in regions of the universe which are preferentially conducive to galaxy formation.

This Key Programme can be expected to produce a large body of data about the epoch at which galaxies are believed to be forming. Although we can speculate about questions, these results will contribute to answering; it is the serendipitous observations that often produce the most fundamental advances in astronomy. With this in mind, we embark on this programme on the lookout for the unexpected and in the hope that our observations will pose new problems which as yet cannot be envisaged.

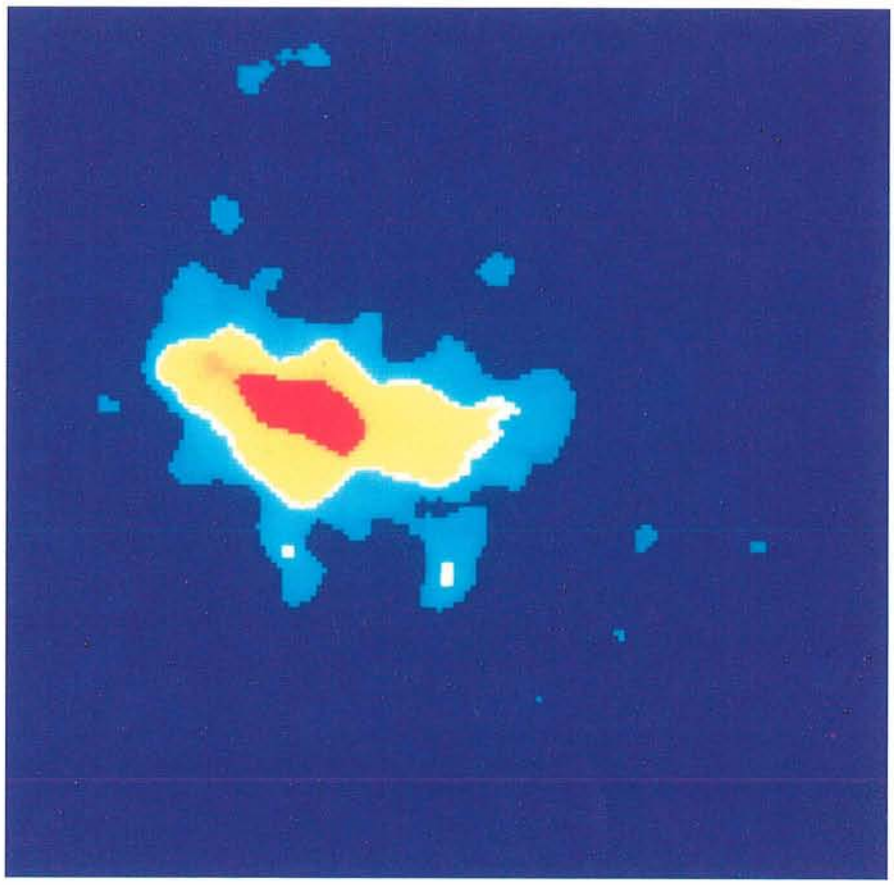

Figure 3: *Lyman alpha picture of 4C41.17 at a redshift of 3.8 (from Chambers, Miley and van Breugel 1989).*

References

Blumenthal, G., Miley, G.: 1979, *Astronomy and Astrophysics* **80,** 13.

Chambers, K.C., Miley, G.K., van Breugel, W.: 1987 *Nature* **329,** 604.

Chambers, K.C., Miley, G.K., van Breugel, W.: 1988a *Astrophys. J.* (Letters) 327, L47.

Chambers, K.C., Miley, G.K., Joyce, R.R.: 1988b, *Astrophys. J.* (Letters) **329,** L75.

Chambers, K.C., Miley, G.K., van Breugel, W.: 1989, Submitted to *Astrophys. J.*

Lilly, S.J., Longair, M.S.: 1984, *Monthly Notices Royal Astron. Soc.* **211,** 833.

McCarthy, P., et al.: 1987a, *Astrophys. J.* (Letters), **319,** L39.

McCarthy, P.J., Van Breugel, W., Spinrad, H., Djorgovski, S.: 1987, *Astrophys. J.* (Letters), **321,** L29.

Pelletier, G., Roland, J.: 1988, *Astron. Astrophys.* **196,** 71.

Roland, J., Véron, P., Stannard, D., Muxlow, T.: 1982, *Astron. Astrophys.* **116,** 60.

Tielens, Miley, Willis: 1979, *Astronomy and Astrophysics Suppl.* **35,** p. 153.

P/West-Hartley (1989k)

On May 11, 1989, Richard M. West at the ESO Headquarters found a new comet on a photographic plate obtained on March 14 by Guido Pizarro with the 1 m Schmidt at La Silla. This picture is a photographically enhanced reproduction from the 60 min blue-sensitive plate. The comet's head of magnitude 17.5 is seen as a short trail due to the motion during the exposure. The very faint, broad tail measures about 4 arcminutes. The dark, vertical line in the upper left part is an artificial edge mark on the plate.

Since only a single plate was available, it was not possible to determine the direction of motion with certainty. However, on May 28, Malcolm Hartley accidentally discovered a comet on a plate taken by S.M. Hughes with the U.K. Schmidt, about 15° West-South-West of the sky field shown on the photo. It was quickly realized that this object was identical with the comet seen earlier by West. A preliminary orbital computation by Brian Marsden of the IAU Central Bureau for Astronomical Telegrams indicates that it moves in an elliptical orbit with a period of about 7.5 years. It passed its perihelion in early October 1988 at a heliocentric distance of about 318 million kilometres.