

## **Galactic morning**

Andrew Blain (University of Cambridge)

ALMA will observe galaxies containing interstellar dust and molecular gas with unprecedented sensitivity and angular resolution from their formation to the present. Observations of both the intensity of background radiation, from COBE, and discrete galaxies, from SCUBA, at ALMA's millimeter(mm), sub-mm and far-IR wavelengths have provided an excellent first view of dust in distant galaxies, and galaxies discovered using SCUBA have been studied on finer angular scales with existing mm-wave interferometers that are precursors to ALMA.

The dramatically enhanced sensitivity and resolving power of ALMA as compared with existing instruments will allow great advances in the study of high-redshift galaxies, perfectly complementing the optical and IR performance of the NGST. This presentation point outs the advantages of ALMA's resolving power and sensitivity in two key areas:

1. Extremely deep unconfused surveys for normal galaxies at redshifts greater than five, galaxies up to several hundred times fainter than those detected using SCUBA.
2. Resolving gravitationally lensed galaxies, allowing their internal dynamics and the dark-matter distribution in the lens to be traced in great detail.

---

Abstract submitted for Science with the Atacama Large Millimeter Array, 6 – 8 October 1999, Washington, D. C.