These data will typically be at redshifts z less than 0.2 but still deep enough to greatly increase the distance spanned by the redshift surveys in the new non-Pole directions. Combined with the new northern data, we will directly check whether the Galactic Pole results are a fluke or more universal.

This presentation was largely a progress report with only preliminary results. The new surveys are undertaken in collaboration with T. Broadhurst, R. Ellis, N. Ellman, R. Kron, J. Munn, and A. Szalay and funded by grants from CalSpace CS-74-90 and NSF AST-9023178.

NUMERICAL MODELS OF Lyα CLOUDS

Gerard M. Williger
Cerro Tololo Inter-American Observatory

Baryonic models for metal-poor, optically thin Lyα forest absorbers have been calculated using a 1-D, spherically symmetric hydrodynamical code. The observed distribution over redshift $2 \leq z \leq 4$ of Lyα cloud number $\mathcal{N}$ can be represented as a function of redshift $d\mathcal{N}/dz \propto (1+z)^{\gamma}$, $2.2 \leq \gamma \leq 2.8$ for rest equivalent width $W \geq 0.3\mathring{A}$; the distribution of neutral hydrogen column density N is $d\mathcal{N}/dN \propto N^{-\beta}$, $1.6 \leq \beta \leq 1.8$ (e.g., Lu *et al.* 1991, ApJ, 367, 37; Carswell *et al.* 1991, ApJ, 371, 36, and references therein).

Assuming that Lyα clouds are not collapsing and forming optically thick cores with stars, then in the course of their evolution they exist naturally in one of three modes: pressure confinement by an intergalactic medium (IGM), free expansion or self-gravitation. Its mode depends upon the cloud evolutionary stage and mass, and upon the pressure of the IGM.

Simulations of constant comoving density cloud populations for all three types over redshifts $2 \leq z \leq 4$ under a variety of conditions have been performed. Photoionisation, photoheating and collisional processes as summarised in Black (1981, MNRAS, 197, 553) were included. Mass spectra were approximated by a power law $d\mathcal{N} \propto M^{-\delta}$. The models were compared directly against Lyα forest redshift and H I column density data taken from the literature by computing absorption line profiles to generate area-weighted line parameter statistics. With a parametrisation of the evolution of the *UV* background flux at the Lyman limit $J \propto (1+z)^{\hat{\jmath}}$, $0 \leq \hat{\jmath} \leq 4$, pressure confined clouds in an adiabatically expanding IGM (e.g. Ikeuchi & Ostriker 1986, ApJ, 301, 522) can account analytically for the observed redshift density and H I column density distributions for $\delta \approx 2$ as long as the cloud mass range is large (over an order of magnitude). However, from numerical calculations it is found that the permitted mass range for such clouds as constrained by Jeans mass considerations and cloud detection thresholds is too narrow to allow a match to the data over the entire observed redshift range. A population of uniform, homogeneous clouds purely in free expansion suffers from similar difficulties. The best results come from a population of self-gravitating polytropes embedded in a low pressure IGM. Such clouds are similar to those in Black (1981), with radii of $20 \leq R \leq 120$ kpc and masses $8.3 \leq \log M/M_{\odot} \leq 10.6$. The smaller clouds expand freely, while the larger ones remain in quasi-static balance. For a mass spectrum $\delta \sim 1.0 - 1.5$ and a *UV* background flux constant in time $\hat{\jmath} = 0$, an ensemble of self-gravitating clouds yield $d\mathcal{N}/dz$ and $d\mathcal{N}/dN$ most consistent with observations.

FORMATION OF GALAXIES WITH DISSIPATION

Mirta B. Mosconi and Diego García Lambas
Observatorio Astronómico Nacional,
Córdoba, Argentina

We want to investigate which are the main physical parameters that control the formation of discoidal and elliptical structures. In that sense, we study different dissipative models in full N-body numerical simulations. We use the Nbody2 program of Aarseth to analyze the evolution of the systems, and its cosmological version to give a consistent treatment of the evolution of the primordial density perturbations.

AGES OF GLOBULAR CLUSTERS DERIVED FROM BVRI CCD PHOTOMETRY

Gonzalo Alcaíno, William Liller,
Franklin Alvarado, and Erich Wenderoth
Instituto Isaac Newton,
Ministerio de Educación de Chile

Main sequence photometry has been obtained in the *BV* system for around 45 galactic globular clusters, equivalent to one third of its total population. One of the most important objectives for these continued researches by several astronomical groups has been that of determining the ages of globular clusters. It is still an open question if the spread in age among the known galactic globular clusters could be as small as 2 billion years, or as large as 6 billion years.