similar richness. Deep three-color Gunn photometry was also obtained in order to determine the spiral content of the cluster and to test for an anomalously high fraction of excessively blue and emission line galaxies.

5.09

A Re-evaluation of the Butcher-Oemler Effect using Spectra of High Redshift Galaxies.

M. Newberry and T. Boroson (U. Michigan)
R. Kirshner (Harvard U. and CfA)

We have obtained spectra for 62 galaxies in the central fields of 7 high redshift ($0.2 \lesssim z \lesssim 0.38$) centrally condensed clusters from the Butcher, Oemler, and Wells (1983) sample. From redshift determinations which are all better than $\sigma_z \sim 0.001$, we find that 26 of 29 red galaxies of 5 of 13 blue galaxies in the Butcher-Oemler sample are actual cluster members. These data are combined with those of Dressler et al. (1983,1985) and Lavery and Henry (1986) to estimate limits on the true blue galaxy fractions (f_b) for nine clusters having $0.2 \lesssim z \lesssim 0.46$. From this we have re-evaluated the trend in $f_b(z)$ suggested by Butcher and Oemler (1985) based upon photometric data. We calculate $df_b/dz = 0.49 \pm 0.13$ relative to low redshift clusters of $z \lesssim 0.08$. This is consistent with $df_b/dz = 0.52$ estimated by Butcher and Oemler. The null hypothesis that f_b is the same for high- and low-redshift clusters is rejected at better than the 97.5% confidence level.

The velocity dispersions for these clusters have been estimated using the redshift data. Combined with redshift data for other high redshift clusters from Dressler et al., the velocity dispersions show a tightly defined increase with redshift. The majority of this trend cannot be attributed to observational effects. A simple virial analysis suggests, however, that $\sigma(z)$ should be approximately the same for all clusters in this sample. This result is used to discuss the relative effectiveness of starburst activity and stripping in leading to the observed paucity of blue galaxies in low redshift centrally condensed clusters (e.g., Coma).

5.10

Detached Supernovæ From Undetected Dwarf Galaxies: Expected Rates From Star Formation Models.

N. D. Tyson (Univ. of Maryland)

The Type II supernova observed by Niemela, *et al.* (1985) appeared "detached" from the star forming regions of the nearest galaxy in their photographs. If an extreme dwarf irregular galaxy were forming stars but was too dim to detect, then we should expect occasional supernovae to occur that would appear as though they had no host galaxy.

Models are presented that follow a possible star forming history of dwarf irregular galaxies. Special attention is given to the high mass population of stars that are believed to be supernova II progenitors. Expected supernova rates are given for a range in IMF's, and a range of progenitor mass cutoffs. These rates are converted to surface densities on the sky for various limiting apparent magnitudes.

Preliminary results suggest that "detached" supernovae may be quite common.

Niemela, V., Ruiz, M., and Phillips, M. 1985, *Ap. J.* **289**,52.

5.11

VLA Observations of Neutral Hydrogen in the Hydra I Cluster

H.C. Ferguson (Johns Hopkins U.), O.-G. Richter (STScI), J.H. van Gorkom (NRAO)

HI maps of three fields in the Hydra I cluster are presented. The images show the three largest spirals and ten other galaxies. The ratio of HI diameter to optical diameter tends to increase with projected distance from the cluster center, similar to the trend seen in the Virgo cluster. The small HI disk of NGC3312 supports the hypothesis (Gallagher 1978) that ram pressure sweeping is occurring in this galaxy. The HI distribution is mildly asymmetrical with respect to the optical image, and trails off to higher radial velocities near the optical filaments. Assuming this is due to ram pressure effects, we are able to set constraints on the tangential component of the galaxy's velocity. NGC3314, the foreground galaxy in a superposition of two galaxies, also exhibits an HI tail that appears to be associated with optical filaments. In addition to the results for the bright galaxies, we report on the detection of an isolated ~10^9 $M_\odot$ HI cloud not associated with an optical galaxy (down to a limit of B ~25.3/sq. arcsec).

5.12

The Local Distribution of Galaxies

J. R. Auman, P. Hickson, and G. G. Fahlman (U.B.C.)

The B_T^S magnitudes for all galaxies in the Uppsala General Catalogue have been derived using regression formulae that convert CGCG magnitudes to the B_T^S system. Galaxy counts indicate that the UGC is complete to $B_T^S = 14^m.5$. These B_T^S magnitudes have been used to investigate the distribution of galaxies with $|b^{II}| \geq 30°$ to distances of $\sim 130h^{-1}$ Mpc. After excluding the Virgo supercluster ($0° < SGL < 125°$; $-20° < SGB < 20°$), the galaxy counts are consistent with a homogeneous distribution. However, nonuniformities in the galaxy counts occur when the sample is divided into smaller areas of the sky, indicating that inhomogeneities exist on scales of at least up to $\sim 100h^{-1}$ Mpc.

Session 6: SOFIA
Display Session, IRC Lobby
Monday

6.01

SOFIA: Stratospheric Observatory for Infrared Astronomy

L.J. Caroff and E.F. Erickson and G.W. Thorley (NASA-Ames)

SOFIA is a proposed 3-meter class telescope in a Boeing 747 airplane, anticipated as a joint development by NASA and the West German Science Ministry (BMFT). The concept is based on 13 years of experience in operating the Kuiper Airborne Observatory (KAO), a Lockheed C-141 jet transport with a 91 cm diameter telescope, which SOFIA would replace.

SOFIA will provide in-flight access to focal plane instruments while operating consistently above 41,000 feet altitude. Viewing the sky through an open port, the telescope will be used over a wavelength range from 0.3 microns to 1.5 microns. The telescope will be diffraction limited beyond 30 microns, and will be seeing limited at visible and near infrared wavelengths at the 2-3 arc second level. Pointing stability will be 0.2 arc seconds rms, as achieved on the KAO with a similar stabilization system.

Focal plane instruments will be provided largely by the investigators. The instruments will include photometers, array cameras, and polarimeters operating in the 0.3 - 350 micron range, and spectrometers with resolutions up to 1 km/sec operating from roughly 0.9 microns to 1.5 microns. With the requested 120 flight per year program, SOFIA would support about 15 instrument teams and 25 guest investigator groups, selected by annual peer review.

SOFIA is expected to have a 20 year lifetime and could be operational in the early 1990's. Its good spectral and spatial resolution assure SOFIA a complementary role to ISO and SIRTF, and its wavelength range complements those of