53. If we adopt a foreground plus internal reddening of E(B-V) = 0.10 for the LMC based on direct measurements of the Balmer decrement for several planetary, and estimates from B stars, clusters, and HII regions, we find the distance modulus to be 18.47 ± 0.15 which agrees superbly with the Cepheid distance modulus of 18.47 ± 0.15 ( Feast and Walker 1987, Ann. Rev., 25, 345) and estimates using RR Lyrae stars, Miras, OB stars, and clusters which yield values between 18.2 and 18.5.

The excellent consistency between the PNLF distance, which uses the bulge of M51 as its sole calibrator, and the Cepheid distance is very strong evidence that the method is insensitive to host galaxy Hubble type, color, or metallicity.

45.07
The Distribution of Diameters of LMC Open Clusters
V.M. Blanco (CTIO)

Apart from our galaxy only in the Magellanic Clouds can one, at present, survey open clusters with reasonable completeness. The few existing comparative studies of the diameters of such clusters in the Magellanic Clouds and in the solar neighborhood (Hodge A.J. 85, 423, 1980; Bhatia and MacDillivray: A. and Ap. 21, 9, 1989) suggest that LMC open clusters are, on the average, appreciably larger than clusters in the solar neighborhood. However, existing complete Magellanic Clouds clusters surveys were made with Schmidt telescopes where unfavorable scales made difficult the detection of small clusters (Morgan et al. p. 95 “Recent Developments of MC Research”, 1989). In a large-telescope survey of sample regions of the LMC (Hodge, loc. cit.) many small LMC possible clusters were discovered. The survey, however, did not include tests for the reality of the stellar groupings catalogued.

In a new survey in 10 sample LMC areas, sky-limited photographic plates with a scale of 1876/mm taken with the CTIO 4m telescope, diameters were measured for newly discovered and previously known stellar groups which appear to be true clusters from Poisson tests. Assuming 18.3 for the LMC distance modulus, the diameter distribution for 200 probably LMC clusters is roughly similar to that of Galactic Clusters within 1 kpc from the sun as listed by Becker and Penkart (A. and Ap. Supp. 4, 241, 1971). On the average, the diameter of the LMC clusters is 4.2 pc and of those in the solar neighborhood 3.9 pc.

45.08
Dwarf Spheroidal Galaxies and the Outer Milky Way Potential
J.R. Kuhn and R. Hippe (MSU)

The time dependent tidal interaction of the dwarf Spheroidal (dS) galaxies and the Milky Way (MW) effectively transfers orbital energy to the internal kinetic energy of the dS star systems. The innermost dS are not in virial equilibrium so that observations of large stellar velocity distributions are not indicative of dark matter. From the conclusion that the dS do not contain dark matter, and the assumption that they have survived for at least 15 Gyr, we learn about the form of the outer MW potential. Here we report our conclusions from numerical experiments that directly integrate realistic dS systems in an ensemble of MW potential functions.

46.01
The Astro-1 Mission
T. R. Gull (NASA/GSFC) and E. Urban (NASA/MSFC)

In May 1990, the Astro-1 Mission will fly four astronomical telescopes as an attached payload on the Shuttle Columbia (descriptions of these four instruments are by Serlemitsos, Code, Davidson, and Stecher in this session). As this abstract is being prepared, the payload is installed and checked out in the Columbia. Plans continue for launch at 4:50 GMT on 9 May with a 9 day mission (plus one day extension) duration. The timeline includes about 300 observations of over 230 astronomical sources. This talk will summarize the actual mission accomplishments and future plans for the data. Reflight opportunities will also be addressed.

46.02
The Wisconsin Ultraviolet Photopolarimeter Experiment
A. D. Code and K. H. Nordtsieck (U.Wis.-Madison)

The Wisconsin Ultraviolet Photopolarimeter Experiment (WUPPE) is one of the four ASTRO-1 payloads. WUPPE is designed to measure all four Stokes parameters in the spectral region from about 3000 Å to 1400 Å to a magnitude limit for point sources of the order of 16 th magnitude. Depending on the mode of operation, the spectral resolutions from about 4 Å to 40 Å can be obtained. The design provides for a large dynamic range and the high precision required for accurate polarimetry. A brief description of the instrumentation will be presented.

The science goals involve among other things studies of ultraviolet intragalactic polarization, intrinsic polarization of supergiants, rotating stars, Be stars and close binaries and measurements of polarization of selected extragalactic objects. It is the intent of this paper to present the results of preliminary data reductions and any discussion or analysis that may be possible at this early stage in the processing of WUPPE data. This research is supported by NASA contract NASS-26777.

46.03
Ultraviolet Polarimetry of Rotating A and F Stars
C. M. Anderson and L. R. Doherty (U. Wis.-Madison)

Attempts to measure intrinsic stellar polarization due to rotation at visible and near-ultraviolet wavelengths have foundered because the effect is extremely small. The principal source of continuum polarization is scattering of photospheric light by electrons for hot stars or H atoms for the cooler stars. In the UV shortward of 1800Å, three factors significantly increase the expected net polarization for cooler, rotating stars. Hydrogen Rayleigh scattering increases with shorter wavelength, the ambient photospheric radiation field near the surface becomes strongly outward-directed, and the brightness contrast between the pole and the gravity-darkened equator is more pronounced. The third of these factors is particularly enhanced when one considers wavelengths shortward of the Planck maximum. It is for this reason that our attention focuses on middle to late A and F stars. Calculations based on surface polarizations of line-blanketed model atmospheres (Armstrong and Doherty 1986) predict net polarizations greater than 0.1% in some UV bands, even for stars