THE 177th MEETING OF THE AMERICAN ASTRONOMICAL SOCIETY 13–17 JANUARY 1991 PHILADELPHIA, PENNSYLVANIA

Abstracts of Presented Papers

14 JANUARY 1991 MONDAY MORNING

Session 1: Invited Talk
R. Davis, 8:30–9:20 am
Wyndham C/D

01.01
Results from the Homestake Solar Neutrino Experiment

R. Davis, University of Pennsylvania.

The radiochemical neutrino detector based upon the neutrino capture reaction $^{37}Cl(\nu_e, e^-)^{37}Ar$ has observed the solar neutrino flux from 1970 to the present time. The observations will be discussed with respect to: solar model calculations, the solar activity cycle, the results from the Kamiokande II electronic detector, and the Soviet gallium radiochemical detector. The results can be interpreted by the Mikheyev - Smirnov - Wolfenstein resonance conversion of electron neutrinos into other neutrino types in passing through the mass of the Sun, and/or the interactions of a neutrino with a transition magnetic moment with solar magnetic fields. The work presented was supported by the National Science Foundation, and the University of Pennsylvania Research Foundation.

Session 2: HAD
Display Session, Conference Ballroom/Hall

02.01
An Early Color Rendering of the Planet Jupiter

T. A. Hockey (UNI)

In the latter nineteenth century, a Pennsylvania astronomer called attention to a noteworthy feature visible on the planet Jupiter. Alfred Mayer (1836-1897), a professor at Lehigh University, observed an elliptical feature cross the jovian disk in January, 1870. Mayer was inspired to prepare a unique water color of Jupiter. This painting was reproduced in color within the pages of the Philadelphia Journal of the Franklin Institute (Mayer, A. "Observations of the Planet Jupiter." LIX, 136, 1870) and represents the first published color picture of the giant planet.

Mayer's ellipse is pale yellow in the faded chromolithograph today. Contemporary descriptions of the feature describe it as being red. The color, morphology, and location of the ellipse suggest that it was none other than the Great Red Spot and represents documentation of this feature eight years before its modern "discovery."

This work was supported in part by NSF grant AST-8010836.

Session 3: Quasar Continuum Emission
Display Session, Conference Ballroom/Hall

03.01
An Atlas of Quasar Energy Distributions

J. McDowell, M. Elvis, B. J. Wilkes (CfA)

We present the results of a survey of the radio to x-ray energy distributions of 37 low redshift quasars. The quasars show diversity in their radio, infrared, ultraviolet and x-ray properties. We present luminosities and bolometric corrections, and present observational color-color diagrams for the sample (cf. McDowell et al 1989). This study is the first multiwaveband study to include x-ray spectral information, and will improve our ability to address fundamental questions such as the nature of the central energy source.

A large number of datasets have been included in the analysis. We have reanalysed Einstein IPC soft x-ray spectra for each quasar (Wilkes and Elvis 1987, Masnou et al 1990 in preparation, Wilkes et al 1990 in preparation). We have carried out IUE observations for all the objects which had not already been so observed, and extracted archival IUE data, including multiple epoch observations for most of the quasars. IRAS fluxes or upper limits have been obtained for each object. We also carried out a complementary ground-based observational program to obtain optical spectrophotometry, and infrared photometry, and included radio data from the literature.

To examine the basic properties of the population, we have calculated luminosities in a series of octave-wide bandpasses and constructed color-color diagrams using these luminosities. The diagrams illustrate the variation among the sample of the shape of the ultraviolet bump, and the strength of x-ray and far-IR fluxes. We examine the results in the light of accretion disk, synchrotron and thermal dust models for the various continuum components.

Wilkes, B. J. and Elvis, M. 1987 *Ap.J.* **323**,243
McDowell, J. C., et al, 1989 *Ap.J.* **345**, L13