

(F) SHUTTLE-BORNE ASTRO MISSIONS

ULTRAVIOLET POLARIMETRY

A.D. CODE, K.H. NORDSIECK, C.M. ANDERSON

University of Wisconsin

Abstract. Interstellar polarization and polarization of the sky background is predicted to be significantly smaller in the ultraviolet than in the optical region of the spectrum; while intrinsic polarization is expected to be greater. For these reasons alone ultraviolet polarimetry should provide a powerful diagnostic tool. To date such polarization measurements have not been undertaken. The Wisconsin Ultraviolet Photopolarimeter Experiment (WUPPE) will be the first to carry out a program of UV spectropolarimetry. WUPPE is one of the four ASTRO-1 payloads. It consists of a half meter aperture Cassegrain telescope feeding a spectropolarimeter capable of measuring spectral energy distribution and linear and circular polarization in the spectral region from about 3300 Å to 1400 Å with spectral resolutions from about 4 Å to 40 Å, depending upon the mode of observation and nature of the source. The effective area of WUPPE is approximately 100 cm² at 2000 Å and the faint stellar limit for measurement of all four Stokes parameters is about 16 magnitude. The design provides for a large dynamic range and the high precision required for accurate polarimetry. Launch of the first ASTRO Mission is expected in May of 1990.

The science goals for WUPPE include studies of ultraviolet interstellar polarization, intrinsic polarization of a wide variety of stellar types and measurements of polarization of selected extragalactic objects. A description of WUPPE and simulations of expected data will be presented. The paper will also discuss a wide field imaging survey polarimeter (WISP) now undergoing development for a sounding rocket payload at the University of Wisconsin. (This work is supported by NASA contract NAS5-26777).