5 arc sec were realized. Deconvolution of the observed profile was accomplished without recourse to the usual functional fitting so that the shape of the true profile preserves information of the ion velocity distribution function. Relative intensities of the emission line and background were also measured. In this report we discuss the full width half maximum (FWHM) values and ascribe the width to an ion temperature. Results near the East limb in a homogeneous coronal region show temperatures between 2.2 and 4.5 MK. The high spatial resolution permits a new investigation of the temperature gradients near the limb. A contribution of the turbulent velocity would be consistent with the steep radial gradients near the limb.

H.5 Implications of Lyman α Measurements on Coronal Electron and Proton Temperatures between 2.0 and 4.0 Rₘ, G.L. WEISBERG, J.L. KOHL, H. WEISBERG, Center for Astrophysics, Cambridge, MA 02139 – Measurements of the profile of resonantly scattered hydrogen Lyman α have been used to determine coronal proton temperatures between 2.0 and 4.0 Rₘ. Empirical models derived from the measurements suggest that in the quiet, unstructured coronal region where the measurements were made the proton temperature decreased with increasing height from 2 x 10⁶ K at 2.0 Rₘ to less than 10⁶ K at 4 Rₘ. Measurements at higher intensities imply that the coronal electron temperature was nearly constant over the same height range. These results suggest that in the observed region there was no appreciable heating of the protons by the coronal heating mechanism between 2 and 4 Rₘ. At lower heights protons could be heated either by a mechanism which heats the protons directly or by a mechanism that heats the electrons which then heat the protons through collisional interactions. This work was supported by NASA under grant NGR 552128 to the Harvard College Observatory.

H.6 HAO White Light Coronal Observations of the 16 February 1980 Solar Eclipse Period, R.H. Muñoz, R.R. Fisher, and J.A. Street, High Altitude Observatory, NCAR. During the period around the solar eclipse of 16 February 1980, HAO made observations of the white light corona from three separate instruments: the Mark III K-coronameter located in Hawaii, the Coronale Camera placed in the total eclipse path in India, and the Joint UV-α White Light Rocket Coronagraph Package launched from White Sands. Data from the Mark III Instrument (1.2 to 2.2 Rₘ) obtained several days before and after the eclipse showed that the corona was actively evolving. Coronal regions on the west limb were the most complex and dynamic. Other significant changes occurred at the equator; transients were in progress during the eclipse on the west limb (0020 UT) and east limb (1020 UT). The synoptic nature of the Mark III data permits the determination of the coronal geometry at the time of the eclipse and aids in the interpretation of the data of the one-time observations from the Coronale Camera (1.04 to 3 Rₘ), Rocket Coronagraph (1.7 to 7 Rₘ), and eclipse experiments from other institutions. Final photometric reductions of the eclipse measurements will permit the print-by-print intercomparison of brightness and polarization brightness (dβ) values obtained with each of these instruments.

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H.7 Coronographic H I Lyman-Alpha Observations following the 1980 Solar Eclipse, H. WEISBERG, J.L. KOHL, W.R. PARKINSON, AND G.L. WEISBERG, Harvard-Smithsonian Center for Astrophysics. A Lyman-alpha coronagraph (Kohl, Reeves, Kircham, 1978) was launched with a High Altitude Observatory white-light coronagraph aboard a sounding rocket from the White Sands Missile Range on 16 February 1980, at 23h32UT, within 14 hours of the natural solar eclipse over Africa and Asia. Coronal H I Lyman-alpha profiles were obtained for six lines of sight in two separate coronal regions between 1.5 and 3.5 solar radii. The spectral resolution was 0.3 Å; a spectral range of 3 Å was covered. All profiles were from 0.6' x 4' spatial elements. The instrument also obtained chromospheric H I Lyman-alpha profiles, providing an in-flight calibration. The data are of high quality, permitting the determination of profile widths to an accuracy of better than about ±5% and absolute intensities to an accuracy of better than ±10%. The measured line profile, with the possible exception of the far wings, appears to be approximately Gaussian. Wavelength shifts between the coronal profiles and the chromospheric and geocoronal profiles were observed. A comparison of the measured profile widths and intensities to theoretical models, which include the effects of the geocorona, permits the evaluation of the proton temperature in a quiet coronal region and a polar coronal hole as a function of distance from sun center. The data combined with white light observations contain information about outflow velocities of coronal protons into the solar wind. The observations, initial results and comparisons to theoretical models will be discussed. This work was supported by NASA Grant NGR 552128 to the Harvard College and the Smithsonian Institution.

H.8 Airborne Photometry of the Corona from 1.1 to 20 Rₘ During the February 16, 1980 Solar Eclipse, C.F. Keller, J.A. Montoya, B.G. Strait, J.E. Tabor, LASL. During the 1980 eclipse, 68 absolutely calibrated exposures of the solar corona were made from a USAF jet aircraft at 11.0 kilometers in altitude over the Indian Ocean. Observations were made as part of a continuing LASL program to determine electron densities of the solar corona as a function of solar activity (Keller, 1971, Solar Phys., 21, 425; Keller and Tabor, 1975, BAAS, 7, 234; Muthlicener, Keller, and Tabor, 1976, BAAS, 8, 397). Absolute photometry will be presented and compared with our 1973 results out to 12 Rₘ and with 1963 data of other observers to 20 Rₘ. We believe this data to be the first acquired over such a large continuous range since 1963.