11.02  **Ha Activity in X-Ray Bright Points and the Origin of Spicules.** H.R. Morgan, Caltech, BBSO, and L. Golub, Harvard Coll. ... and neutral hydrogen at the second harmonic.

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11.03  **The Los Alamos Coronal Imaging Program.** C.F. Keller, C.G. Lleilliequist, W. Matsuka, LASL.

Since 1965 Los Alamos Scientific Laboratory has been observing solar eclipses from USAF high altitude jet aircraft. One instrument (Keller, 1971, Solar Phys. 21, 425) has made outer coronal (12 R₆) photo-polarimetric exposures at eclipses in 1970, 1972, 1973, 1979, and 1980. Other imaging experiments were a 500 mm Hasselblad with a metal deposition radially graded filter at 1972, 1973, 1979, and 1980 eclipses, and a 1000 mm Hasselblad with an internal occulting disc in 1980. Shown at the poster session are computer enhanced photographs (Matsuka, Janney, Farrell, and Keller, 1978, Optical Eng., 17, 661) from the first, and color photos from the second and third experiments. Notable among these is the obvious change in streamer distribution during the solar cycle, and the eruptive disturbance extending from the solar limb beyond 7 R₆ in the 1980 photographs. Also included is a comparison of coronal brightness in 1973 with that in 1980.

11.04  **Trap of Nonthermal Electrons in a Magnetic Loop.** T. BAT, UCSD. Using a Monte Carlo method which was recently developed for calculations of energetic electron transport in a plasma (Bai 1980, B.A.A.S. 12, p. 482), I have studied the trap of energetic electrons in a magnetic loop (bottle) in the solar atmosphere. The assumptions of the model calculations are: (1) the magnetic loop is very thin and symmetric; (2) the magnetic field strength is weakest at the top of the loop and increases monotonically as the distance from the top along the field lines increases; (3) mono-energetic electrons are released isotropically at the top of the loop. The important parameters of the model are: (1) the mirror ratio Rₑ, which is the ratio between the magnetic field strengths at the transition zone and at the top; (2) \( y = n \varepsilon E \varepsilon \), where \( n \) is the ambient electron density in cm⁻³, \( d \) is the half length of the loop in cm, and \( E \) is the initial electron energy in keV. Some of the interesting results are as follows: In the low column density regime \( (y < 5 \times 10^{15} \text{ cm}^{-2} \text{ keV}^{-2}) \) the trap efficiency is larger for smaller mirror ratios, and in the high column density regime \( (y \geq 7 \times 10^{15} \text{ cm}^{-2} \text{ keV}^{-2}) \) the trap efficiency is larger for larger mirror ratios. For a given mirror ratio, the trap efficiency is very sensitive to \( y \) in (the 2.5 - 10 \times 10^{15} \text{ cm}^{-2} \text{ keV}^{-2} \) range; the trap efficiency increases rapidly as \( y \) increases. Physical explanations for these results will be given and implications of these results will be discussed in the context of interpretation of solar hard X-ray and microwave data.

11.05  The Field Line Tying Effect on a MHD Stability of a Coronal Magnetic Loop. C.-H., AN, UCSD. We examine the magnetohydrodynamic stability of a cylindrical magnetic loop, taking into account field line tying at its foot points. We use the ideal MHD energy equation to derive a stability equation of a loop with large aspect ratio. We found that the field line tying effect is important only near singular surfaces at which \( k r B_\parallel (r_\parallel + n B_\perp (r_\perp = 0 \) is satisfied and negligible far from the surface. The effect of field line tying on the \( m = 1 \) kink mode is negligible because the mode is finite at \( r < r_\parallel \) but zero at \( r = r_\parallel \), where \( r_\parallel \) is a \( m = 1 \) singular surface. However the field line tying effect is important to the high m mode localized near a singular surface \( r_\parallel \). The stability criterion for high m localized modes is derived and compared with the Suydam criterion. The result shows that the field line tying effect can reduce the stability if the gradient of the potential magnetic field is positive and large. This subtle field line tying effect can be understood in terms of the local shear. We will also discuss the field line tying effect on the resistive tearing mode. The result of this work is contrary to the result of Hood and Priest (1979), in which they found that the field line tying effect is significant to the \( m = 1 \) mode. We believe that the contradiction comes from their incomplete minimization of the energy equation. This work has been supported by grants NASA NSG-7406 and AFOSR 76-3071.

11.06  **Airborne Far Infrared Observation of the Annular Solar Eclipse of August 10th 1980.** T.A. CLARK