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ABSTRACTS

22.08.06 Three Astronomical Binaries with Low Mass Invisible Companions. S. L. LIPPIEUG, Strool Obs. - Three nearly red dwarf stars on the Strool astrophotographic program, 1958-66, are discovered and analyzed from Strool Observatory plates, 1930-60, now include measurements through 1976. The increased interval between observations and homogeneity measurements from the Strool machine lead to a better definition of the orbital elements, yielding $P=261.7$ days and the angle of the photocentric orbit $\alpha=0^\circ 033\pm$. For $M=0.29$ the minimum mass for B is 0.068 assuming n light contribution to the photographic image, i.e., $\Delta m=5.3$. For $M=0.29$ the latter value is a less likely interpretation with $M=13.8$ for the B component. Observations from 1962-76 on 10607 (m=11.1, V) indicate a unseen companion with $P=22.4$, $\alpha=0^\circ 25$ and $\beta=-7^\circ 0$. For an adopted mass of the visible component 0.3 the minimum mass of the invisible companion is 0.074. For $\Delta m=2$, the mass is 0.134. The Sprout observations on 94 nights, 1971-76, of 10607, $m=13.05$, reveal the astrometric binary orbital motion with best fit: $P=125$, $T=1967.7$, $e=0.7$. The scale $\alpha=0^\circ 030$, $\beta=-1020$. The orbital elements with assumed mass range of 0.14 to 0.22 for the visible component with $\Delta m$ ranging from 0.0 to 0.1 yield a mass for the unseen companion between 0.060 and 0.11. Independent analysis of the Sprout plate residuals yields orbital elements and mass range for the invisible companion in excellent agreement with that made at the U.S. Naval Observatory over the interval 1965-70.

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23.02.03 Continunm Brightness Enhancement Surrounding Sunspots. A. H. Nye, Sacramento Peak Observatory - Photoelectric measurements were made of continuum intensities at several wavelengths using the Sacramento Peak Vacuum Tower Telescope, Echelle Spectrograph, and Diode Array. Three scans of 300 arc seconds length were made through a sunspot and into the surrounding photosphere at seven minute intervals for periods of six to eight hours. The intensities were corrected for limb-darkening, normalized by the photospheric intensity, and averaged over all the scans to remove the effects of granulation. The average intensities in regular intervals at increasing radial distances from the center of the sunspot were calculated and tested for statistical significance. A broad diffuse bright ring was found with peak amplitude of 0.5% enhancement which would account for about 10% of the missing energy of the sunspot. This enhancement is nearly an order of magnitude lower than that previously reported.

23.03.03 The Interpretation of Polarized Intensity Measurements in Terms of Transverse Fields in Sunspots. E.A. West, M.J. Hagyard, and N.P. Cumings, NASA/MSFC. - Transverse measurements made by the Marshall Space Flight Center solar magnetograph on two H-type sunspots will be presented. The intensity patterns produced by the polarized light from the observed regions will be shown. To properly interpret these intensity patterns the systematic errors inherent in the optics of the MSFC solar magnetograph must be minimized. What these systematic errors are and how they are minimized will be discussed.

23.04.03 Comparisons of Measured Transverse Magnetic Fields with Potential Theory Calculations. N.J. Hagyard and D. Truiber, NASA/MSFC. - Magnetic field lines calculated from measured transverse field data for the isolated spot at disk center on 24 November, 1976 (Boulder...