range 605-635 Å and 1210-1270 Å. We present preliminary line widths as a function of height above the limb for λ609/625 MgX, λ1242 Fe XII, λ629 OV, and λ1238 NV. These emission lines correspond to a range of temperatures of formation, and evidence of line broadening is observed near and above the limb for all lines, especially those with higher temperatures. The effects of spatial averaging, including radiative transfer effects have been considered. This broadening may be the effect of hydromagnetic waves in the lower corona (e.g., Esser et al. 1987).

25.05
Truncation Effects on a Nonlinear Solar Dynamo Model
E. Deluca
(Dept. of Astronomy and Astrophysics, The Univ. of Chicago)
We have examined the effect of severe truncation on the solutions of a highly nonlinear model for the solar dynamo. Poorly resolved solutions show a sequence of bifurcations, leading to time dependent solutions. We show that these solutions are unphysical, and purely a result of the low resolution. As the resolution is increased, many modes are excited at the highest magnetic Reynolds numbers. We discuss the implications for solar dynamo models.

25.06
Impulsive Plasma Heating by Current-Driven Instabilities
David Cromwell (HAO, NCAR) and Taihong Chiuhe (U. of Colorado)
We present a theoretical model for the stellar atmosphere heating during flare events. The model is applicable in strong magnetic field (low plasma-β) environments. The electric current associated with the reconnected magnetic flux, or even the secondary return current, can become increasingly strong during the flare impulsive phase. We consider plasma heating by microinstabilities in a sequence of stages. Starting from the weak-current Coulomb heating phase, it then follows the first wave-heating phase, where the ion cyclotron waves are excited, and finally reaches the strong-current second wave-heating phase, where the ion-cyclotron waves and the ion-acoustic (or a hybrid type of wave) are both excited. During the wave heating phases, the ion perpendicular and parallel temperatures and the electron temperature are increased at different rates. We are able to determine the evolution of each individual temperature and the fluctuation level of each type of wave. The temperature ratios approach asymptotic values in a fraction of the current rise time. Depending on the details of loss mechanisms, the asymptotic values of the electron to ion-parallel temperature ratio and the ion-perpendicular to ion-parallel temperature ratio vary somewhat; generally they are about 6 and 4, respectively. For typical solar parameters, the electron temperature increases exponentially in the wave-heating phases and can be enhanced by two orders of magnitude in one current rise time. This model also predicts the lower limit of the current rise time for steady-state heating, below which heating is expected to proceed in a bursty fashion.
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25.07
Probing the Sun's Internal Rotation
P. Demarque, D. B. Guenther (Yale U.)
We have explored the sensitivity of the rotational splitting of non-radial acoustic modes of oscillation to the distribution of angular momentum in the interior of the Sun. The constraints on the solar rotation profile put by current observations of solar p-modes are evaluated, and discussed in the context of other constraints derived from observations of surface rotation rates of solar-type stars.

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25.08
How Quiet is Quiet? - Movies of the Quiet Sun in EUV Emission Lines
D. M. Rabin (NOAO/NSO), J. F. Dowdy, Jr. (NASA/MSFC), G. L. Withbroe (CITA)
For the first time, data from the Harvard/Skylab EUV spectrophotometer is shown in a movie format. We show sequences from two different locations on the Sun. Each sequence is actually six parallel sequences of rasters taken simultaneously in six EUV emission lines that span a range of temperatures from 2.1xl0^4 K (chromosphere) to 1.6xl0^5 K (corona).
The first sequence comprises nine rasters of a 5 arcmin^2 area near disk center over a period of 50 minutes (it took 5.5 min to complete a raster). The movie reveals many time-variable bright points within the supergranular network.
The second sequence shows a 1.5 x 5 arcmin^2 region at the east limb on the equator. This movie shows from a different perspective the same kind of small-scale, dynamic activity the first movie shows on the disk. There is a notable similarity between the second EUV movie and Hx movies near the limb that show dynamic spicules extending from the network. The second movie also includes a small surge-like event which rises from the network just inside the limb. The surge appears first in the cooler lines, then in hotter lines, but never shows clearly in the corona.

25.09
Observed Magnetic Structure and Activity in the Quiet Solar Atmosphere
R. L. Moore, J. F. Dowdy, Jr. (NASA/MSFC), D. M. Rabin (NSO)
We present observations of the magnetic structure of the solar photosphere, chromosphere, chromosphere-corona transition region, and corona in a quiet region at disk center. We use a full-disk magnetogram from Kitt Peak National Solar Observatory, a time sequence of center-line and blue-wing H-alpha filtersgrams from Big Bear Solar Observatory, and spectrophotograms from the Harvard EUV Spectrophotometer on Skylab. By superposing these images, we study the correspondence of the photospheric field concentrations and polarity reversals with absorption and emission features in the overlying chromosphere, transition region and corona, and with spicular activity in the chromosphere. From this comparison, we find (1) evidence that many fibrilar structures that look like spicules are transient tracers of magnetic loops in small magnetic bipoles and (2) that some of these bipoles are marked by enhanced emission in the transition region and corona. This work is supported by NASA through the Solar Physics Branch of its Space Physics Division.