models involves relaxation of an arbitrary starting configuration. The integrations over time are made considering the usual non-linear hydrodynamic equations simultaneously with energy production and energy flow equations. The time scale of the hydrodynamics is arbitrarily increased in these calculations to allow simultaneous relaxation of hydrodynamic and thermal properties to the static state. Also to dampen initial oscillations, a viscosity is added. It is possible to watch the time history during the relaxation and note the time when there are no more motions. The resulting equilibrium models compare well with other recent solar models considering the differences in opacity and energy generation formulae. Our slightly higher opacities result in a small convective core for these models.

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The radius of the earth and the parallax of the moon from radar range measurements on the moon.

From a limited amount of lunar radar range data taken by the Radio Astronomy Branch of the Naval Research Laboratory during October and November 1957, the following value for the mean center-to-center distance to the moon, s , has been determined.

$$s = 384,402,000 \pm 2100 \text{ meters}$$

Using this radar-determined distance along with the dynamical and geometrical relationship for the moon's mean parallax and the best known values for the various constants involved, the following values for the mean equatorial radius of the earth, a , and the mean equatorial horizontal parallax of the moon, π_{ζ} , have been derived.

$$a = 6,378,125 \pm 68 \text{ meters}$$

$$\pi_{\zeta} = 3422''.571 \pm 0''.047$$

The uncertainties given are standard deviations.

Residuals of measured distance minus the distance computed using parallax values from the Improved Lunar Ephemeris show unexplained monthly and daily variations.

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Burke, B. F. and Firor, J. W., Jr. *Transit observations at 405 Mc/s.*

Right ascensions of the brighter radio sources have been measured as the first phase in a program to improve the accuracy of radio source positions. The apparatus was a 60° corner reflector containing 256 full-wave dipoles tuned to a frequency of 405 Mc/s and symmetrically feed by a branching feeder system. The resulting fan beam measures 12.9 minutes of arc by 20 degrees to half power points, with greatest resolution in right ascension. From the symmetry of the array, level and azimuth errors are determined by construction tolerances, and are believed to be less than 10 seconds of arc. Accuracy of collimation is largely limited by the symmetry of the transmission lines in the feeder system, and was checked observationally by comparison of apparent radio right ascension with that of the optical objects for the sources Tau A, Vir A, Cyg A, and Cas A. A collimation error of $\frac{3}{4}$ minute of arc is indicated. When this error is removed the resulting differences between radio and optical right ascension are less than $\frac{1}{4}$ minute of arc for these four sources.

A number of galactic sources are resolved in right ascension, the most interesting of these being the source Sgr A, often identified with the galactic center. Our results show asymmetrical structure, much like that observed by Drake at 3 cm with the NRAO 85 foot telescope. Exact intercomparison is difficult because of the broad disc component of the galactic background, which must be removed from the 405 Mc/s data, but it appears that the brightest features have similar spectra, and are probably non-thermal, although the spectral index is close to zero. The right ascension of the brightest feature is $17^h42^m41^s$ (1950.0).

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Cameron, A. G. W. *Pycnonuclear reactions and nova explosions.*

At very high densities electron shielding cuts off nuclear Coulomb potential barriers very close to the nuclear surface. Under these circumstances the classical turning points of low energy ions are very insensitive to the bombarding energy. Under such conditions nuclear reaction rates become very insensitive to temperature and very sensitive to density. They can be