required for the occurrence of dynamical instability can be inferred from these experiments.

14.11
Models of Axisymmetric Stellar Systems

J.L. Bishop (U. Chicago)

Self-consistent models of axisymmetric galaxies are derived from numerical solutions of the equations of galactic dynamics. These are obtained with the aid of VanDerWaals's modification of a method developed by Schwarzschild. The models have gravitational potentials of a form described by Kurmin, and, accordingly, equidensity surfaces that are self-similar oblate spheroids. These configurations extend to infinity but their masses are finite. The equations of motion separate and reduce to a set of quadratures in a system of prolate spheroidal coordinates. Three integrals of the motion are known exactly for the models considered. The evaluation of the orbit densities can be formulated analytically. Consequently actual distribution functions can be calculated as well as velocity dispersions. Configurations spanning a wide range of eccentricities are examined.

Session 15: Binaries; HII Regions
10:10–5:30 (Coconino Room, Convention Center)
(Display Session)

15.01
New Classifications for Spectrum Binaries

P.C. Schmidtke (Ariz. St. Univ.)

Photoelectric scanner indices are used to derive new classifications for a sample of spectrum binaries. The classifications are not affected by interstellar reddening or by the veiling or blending of spectral lines.

15.02
IUUE Observations of the RS CVn Binary – TZ Tri

I. R. Little-Marenin (Wellesley College), T. R. Ayres (LAFB, U. Colorado), A. Young (San Diego State U.)

TZ Tri (ε6 Tri, BD+64 2662) is a double-line spectroscopic binary with a mass ratio very close to unity. The estimated spectral classes of the two components are late F III-IV and G5 III-IV with the primary (G5) being the slightly fainter one. TZ Tri belongs to the class of RS CVn binaries due to its very strong CaII emission, its period of 14.7 days and its evolved G type component. IUUE spectra show emission lines of MgII, HeII, OI, CI, CII, SI, SiIV, CIV and NV indicative of chromospheric and transition region (TR) plasmas. The emission lines appear to be single and their velocity shifts show them to be associated with the cooler G5III-IV primary (as is the case for the CaII emission). The contribution of the hotter secondary to the emission line profile is less than 10%.

Strong lithium lines are observed in the optical spectrum indicating a young age for the system. The fact that the primary is the slightly fainter component leads us to the conclusion that we are observing two stars (of almost identical mass) crossing the Hertzsprung gap together for the first time. The chromospheric activity associated with the cooler primary can be understood in terms of the activity-rotation connection. The larger, cooler primary is forced to rotate faster due to tidally enforced synchronism. This produces a higher degree of chromospheric and Tr activity in the primary than in the more slowly rotating secondary. This system appears to be a short period analog to the long period (P = 104 days) Capella system (F9III+G6III) in which the hotter secondary is the active component.

15.03
Balmer Decrements in Active Chromosphere Stars

D.P. Huenemoerder, L.W. Ramsey (Penn State)

We have measured the Balmer decrement (E(B-V)) in several RS CVn stars by subtracting the profiles of non-active stars. All decrements measured to date fall in the same range as solar prominences (E(B-V)=10). The line luminosity, though, is two orders of magnitude greater than a "typical" solar prominence. Analysis suggests that the increased emission can be reasonably explained by the increased scale height of low gravity stars and by extending a prominence in longitude. In any case, the decrements rule out solar-type flare plasma as the source of emission.

Stars included to date are BD+61 1211, II Peg, UX Ari, SZ Pac, HR 7275, FK Com, HD 8357, and HD 199178.

15.04
Photoelectric Photometry of the θ Uma System η Pup

J.R. Kern*, B.B. Bookmyer* (Clemson U.)

θ Puppis (CPD-49°01276, CoD-49°02909) was discovered to be variable by Hoffmeister (Astr. Abh. MH 12, (1), 1949) who later obtained a photographic light curve and classified the variable as a W Uma system (Hoffmeister, Veröff. Sonneburg 3, (1), 1956). The first photoelectric observations of θ Pup were made on nine nights in January 1981 with the 0.6 meter telescope at Cerro Tololo Inter-American Observatory by Kern and are presented. Two nearby stars, similar in brightness, were observed as comparison and check stars, and standard stars were observed to place the observations in the standard USV system. Complete B and V light curves were obtained, each consisting of 780 observations, each observation an average of two 10 second integrations. The observation interval on a given night ranged from 14 to 6 hours. The period of the binary was determined to be Ω = 0.4257 ± 0.00003 (p.e.) using two times of primary minimum and three times of secondary minimum. The resulting light curves are very clean (probable error of a single observation is 0.0003 in ΔB and 0.0004 in ΔV) and indicate clearly that the binary is an A-Type W UMa system. The average depth of the primary minimum is 0.042 in ΔB and 0.040 in ΔV. The difference of the depths of minima is 0.02 in ΔB and 0.01 in ΔV. The curves are nearly symmetric with the maximum at phase 0.75 being brighter by 0.007 in ΔB and 0.003 in ΔV. Normal point light curves, each having 130 points, were analyzed using the Wilson-Devinney and Wood programs and preliminary results are presented.

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