MONDAY AFTERNOON, 24 APRIL 1972

FREDERICK ROOM AT 2:00 P.M.

Gravitation and Relativity

BJ 1 Search for Optical Pulsars. HAEK R. NELSON, Princeton U. - Using on-line digital techniques at the Princeton 42" telescope, we have obtained time series on pulsar candidates drawn from four classes: single-line binaries, double-line binaries, and galactic and extragalactic supernovae. We have studied single and multiple G, F, B, and S production and relate this to t-channel factorization.

*Work supported in part by the N.R. and N.S.F.
†Supported by F. J. E. Peebles

BJ 2 Measurement of Stellar Masses. WILLIAM C. WICKES, Princeton U. - An interferometric photometer has been constructed to resolve binary stars of less than 1 arc-second separation. Stellar masses are obtained from the binary separation and orbital period. The system is to test the stability of Population I binaries, representatives of which have too large a magnitude difference to be resolved by conventional means. The system uses high frequency chopping and extended coherent integration to overcome the effects of atmospheric distortion on the image. Measurements are being carried out at the 26-inch refractor at the U.S. Naval Observatory, Washington, D.C.

*Work supported in part by the N.S.F.
†Supported by F. J. E. Peebles

BJ 3 The Many Faces of Missing Mass. P. J. E. PEEBLES, Princeton U. - The Virgo Cluster of galaxies and the associated clouds of galaxies exhibit several aspects of the missing mass problem (see e.g. A. J. 65, 531-535, 1961). In the Virgo Cluster proper the velocity dispersion seems surprisingly high in relation to the conventional estimates of masses of galaxies if the system is gravitationally bound. The galaxies around the cluster are distributed in a strikingly ordered fashion. Nonetheless it is argued that it is possible to rationalize these observations with the view that this system is 10^10 years old on the basis (a) of a scaling model for the central cluster and (b) of a numerical model of the evolution of the surrounding clouds.

*Supported in part by the N.S.F. and the Alfred P. Sloan Foundation
†Supported in part by the N.S.F.
‡Supported by F. J. E. Peebles

BJ 4 "Missing Mass" in Small Groups of Galaxies. MARGARET J. GELLERT, Princeton U. - Accidental superposition of field galaxies or external groups on a given group may account for apparent mass discrepancies. We attempt to evaluate the extent of such effects by applying the virial theorem to small groups of galaxies produced by Peebles' computer model of group formation. A statistical analysis of the computer model is compared with an analysis of bright galaxies listed in the de Vaucouleurs catalogue.

*Work supported in part by the N.S.F.
†Supported by F. J. E. Peebles

BJ 5 An Experiment to Measure the Total Luminosity of Nearby Clusters of Galaxies. VINCENT KUROK, Princeton U. - The method consists of photometrically scanning (in right ascension) at low angular resolution across the clusters, and integrating the data over many scans. The total luminosity thus obtained, the contribution of field stars being subtracted, is compared to the contribution of individual galaxies in an effort to reconcile the missing mass problem in such bound systems.

*Work supported in part by the N.S.F.
†Supported by F. J. E. Peebles