SOLAR AND STELLAR PHYSICS THROUGH ECLIPSES

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ABSTRACT BOOK

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TITLE: Masses of Some Asteroids, Determined by Dynamical Method

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ABSTRACT: Asteroid masses are the clue values for physical studies of their internal structure and also for the dynamics of the asteroid families. Dynamical method is based on the analysis of the perturbing effects of the bigger mass asteroid on the orbit of a lesser mass body (another asteroid, spacecraft, asteroid satellite). The use of recent ground-based observations by the CCD astrometry, reduced using contemporary astrometric catalogues, gives a possibility to improve the previous adopted mass values and to determine the new ones. Current studies of mass values are based on the observations made at Nikolaev Observatory, National Observatory TUG and observations, taken from the Minor Planet Centre database. Integration of relativistic equations of motion was made with the initial conditions, taken from the DE405 and JPL HORIZONS ephemerides. A number of determined asteroid mass values are compared with the recent determinations, made by other authors.

Ray JAYAWARDHANA, *University of Toronto, Dept. of Astronomy & Astrophysics, rayjay@astro.utoronto.ca*

TITLE: Fundamental Properties of Young Brown Dwarfs

AUTHOR(S): R. Jayawardhana

ABSTRACT: I will review recent work on deriving fundamental properties of young brown dwarfs and very low mass stars, and their implications of evolutionary models. I will also discuss on-going searches for eclipsing binaries in the sub-stellar regime and prospects for the near future.

Pavel KOBUSKY, *Astron. Institute, Academy of Sciences of the Czech Republic, koubsky@sunstel.asu.cas.cz*

TITLE: New Observations of the Binary System Upsilon Sagitarii

AUTHOR(S): P. Koubsky, P. Harmanec, S. Yang, M. Netolicky, M. Wolf, H. Bozic

ABSTRACT: Results of new spectroscopic observations of the system ups Sgr will be presented.

Dmitrij LUPISHKO, *Inst. of Astronomy of Karazin Kharkiv National University, lupishko@astron.kharkov.ua*

TITLE: Near-Earth Asteroids as Principal Impactors of the Earth: Physical Properties and Origin

AUTHOR(S): D.F. Lupishko

ABSTRACT: NEAs are the objects of a special interest from the point of view not only of cosmogonic problems of the Solar system, but of the applied science as well (the problem of asteroid hazard, NEAs as the potential sources of raw materials, etc.). They are much smaller in sizes than main-belt asteroids (MBAs), very irregular in shape and covered with a great number of craters of different sizes. Most of NEAs contain a regolith of low thermal inertia and different thickness. On the average NEAs rotate in the same manner as the small MBAs (D<10 km) but considerably faster than large MBAs. The objects with very complex non-principal axis rotation (tumbling bodies) and super fast rotation are detected among them. The new data on photometric and radar study evidence that about 15-20% of NEAs could be binary systems. Analysis of physical properties of NEAs clearly indicates that the main asteroid belt is the principal source of their origin and only about 10% of NEAs have a cometary origin.

Oleg Yu. MALKOV, *Institute of Astronomy, Moscow, malkov@inasan.ru*

TITLE: Classification of Eclipsing Binaries

AUTHOR(S): O. Malkov, E. Oblak, E. Avvakumova, J. Torra

ABSTRACT: A new catalogue of 6330 eclipsing variable stars is presented. The catalogue has developed from the General Catalogue of Variable Stars (GCVS) and its textual remarks by including recently published information about classification of 843 systems and making corresponding corrections of GCVS data. So, the catalogue represents the largest list of eclipsing binaries classified from observations. The catalogue has been used to develop the most comprehensive set of rules for the classification of eclipsing binaries to date. The resulting procedure allows the classification of a given system basing on a set of observational parameters even if the set is incomplete and can be applied to existing and coming lists of eclipsing variables.

David MKRTICHIAN, *ARCSEC, Sejong University, david@arcsec.sejong.ac.kr*

TITLE: Pulsating Components of Eclipsing Binaries and Eclipse Mode-Identification

AUTHOR(S): D. Mkrtichian

ABSTRACT: I will review the present status of the pulsating gainers of semi-detached Algol-type eclipsing binaries, and discuss the methods of pulsation mode identification during the primary eclipses.