

Celestial Mechanics in Internet — Russian web-site

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Our main goal is to create a professional site in Internet, containing ephemeris service, database of observations, bibliographic references and information on natural satellites of planets. Simultaneously, we solve a problem of providing Russian experts in celestial mechanics with a maximum quantity of information necessary for their joint work and cooperation with foreign colleagues.

The most complete databases in the world on celestial mechanics is located in two sites in Internet. The first one is a site of JPL Solar System Dynamics Group, NASA, that contains the information on planets and their satellites and a service Horizons for calculation of ephemeris of planets and satellites.

Other information site is proposed by the Institute of Celestial Mechanics and Calculation of Ephemeris (IMCCE) in Paris, which has an extensive database on natural satellites of planets. A bibliography on natural satellites of planets is made and permanently being updated in IMCCE; due to participation of N. V. Emelianov Russian publications on observations often unknown to western readers are also included. This bibliographic database being specialized in natural satellites of planets is considerably more convenient for the experts in comparison with the bibliography submitted in ADS Abstract Service.

A site "Celestial Mechanics" presently being created in Celestial Mechanics department of Sternberg Astronomical Institute (SAI) will give one more opportunity get information in some aspects of celestial mechanics. Its basic purpose is to create a database on planet's natural satellites. Up to now, the drawing up and the presentation in Internet of the information on natural satellites of planets in Russian are completed. For all satellite systems of planets the full information is given including physical and orbital data, form and size of satellites, elements of their rotation. The complete information, orbital characteristics and observations of new distant satellites of Uranus, Saturn, Jupiter discovered in 1997–2000 are also available. The ephemerides for new satellites are calculated for the period of the planet visibility in 2001–2002.

Ephemeris tool for all satellites of planets is already created and published by N. V. Emelianov (1996). It presents a software with friendly interface and graphic representation of ephemerides. The task of granting of access to this ephemeris service through Internet is now being solved. Several independent theories constructed on the basis of observations are necessary for each satellite of planets as the theories are rather complicated and the probability of a mistake of a theory is great. Besides, different methods allow different accuracy and some groups of observations have systematic errors. Therefore, the third version for calculation of ephemerides is necessary.

In 2002–2003 there will be rare events in system of Galilean satellites of Jupiter — mutual occultations and eclipses, which photometric observations are very effective for studying satellite dynamics. The significant part of this phenomena can be observed only at Russian observatories. Therefore, the participation of Russian observers in the world observation campaigns of mutual events helps “to rescue” up to 20% of the valuable astrometric data. The Russian part of our site contains all necessary information for observations including ephemerides. It will help to organize observation campaign of events of Galilean satellites in 2002–2003.

Now our site offers general information in celestial mechanics, seminars and conferences, monographs on celestial mechanics in Russian, lists of Russian and foreign astronomical journals, astronomical organizations, electronic addresses and telephones of the active persons in celestial mechanics and some other data. There is also some information on the teaching in celestial mechanics in Moscow State University (MSU), about Chair of Celestial Mechanics, Astrometry and Gravimetry of Physical Faculty MSU, and also about the Celestial Mechanics Department SAI, its researchers and their publications.

Among the nearest tasks of the Celestial Mechanics department SAI there are numerical modelling of motion of distant satellites of planets, and also adjusting models of some satellites on observation data. Besides, ephemeris service of natural satellites of planets will be put in access through Internet, and also the specialized bibliographic database will be created.

References

1. Emel'yanov N. V. A New Tool for Providing Observations of Planetary Satellites with Ephemerides. *Astron. Letters*, 1996, **22**, 135–137.