

HUITIÈME RÉSOLUTION. — Nous attirons l'attention des autorités sur l'importance particulière que présenterait le lancement de satellites autour de la Lune, en vue de la détermination de son champ gravitationnel et de sa forme géométrique; la possibilité d'observer ces satellites par des techniques diverses est, de plus, souhaitable. Nous recommandons de plus que des spécialistes de Mécanique céleste soient invités à étudier les éléments orbitaux qu'il faudra attribuer à de tels satellites pour recueillir le maximum d'information sur le champ gravitationnel de la Lune à l'aide du minimum de satellites.

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## RESOLUTIONS ADOPTED AT I. A. U. SYMPOSIUM No. 21 ON THE SYSTEM OF ASTRONOMICAL CONSTANTS

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RÉSOLUTION 1. — In order to remedy the inconsistencies and inadequacies of the present system of astronomical constants, and to take account of the better determination of such constants provided by recent observations, we recommend that the national and international ephemerides should be based on an improved system of astronomical constants; and that this system should be put into use as soon as it is practicable to the Ephemeris Offices. The new system shall be defined by a non-redundant set of fundamental constants, and by explicit relations between these and the constants derived from them.

RESOLUTION 2. — The Executive Committee of the International Astronomical Union is requested to appoint, at its next meeting, a working group to prepare the revised system referred to in Resolution No. 1, for consideration, if possible, at the XIIth General Assembly of the I. A. U. The following names are suggested for membership of the working group : Professor D. BROUWER, Professor A. DANJON, Dr. W. FRICKE, Dr. A. MIKHAILOV and Dr. G. WILKINS (Secretary).

The working group, in proposing values of the constants of the system, shall take account of the desirability of consistency with the decisions of other international scientific organisations.

RESOLUTION 3. — We recommend that the general precession in longitude and the constant of nutation shall not be changed at this time.

RESOLUTION 4. — We recommend that the working group shall treat the following quantities as fundamental constants (in the sense of resolution No. 1).

(1) The equatorial radius of the reference ellipsoid of revolution, expressed in metres.

(2) A form factor for the reference ellipsoid; the coefficient  $J_2$  in the expression for the external potential of the Earth, as defined by a resolution of the XIth General Assembly of the I. A. U. in 1961, is preferred to the ellipticity.

(3) The mean motion of the Moon (or the constant term and the coefficients in a polynomial in the time, if it is so expressed).

(4) The geocentric constant of gravitation (that is, the product of the Newtonian constant of gravitation with the mass of the Earth and its atmosphere).

(5) The ratio of the mass of the Moon to that of the Earth.

(6) The value of the Astronomical Unit, expressed in metres.

(7) The velocity of light, in metres per second.

(8) The gaussian constant of gravitation, as defined by the VIth General Assembly of the I. A. U. in 1938, having the value  $0.01720209895000\dots$

The working group shall not change this set unless it finds serious reasons to adopt a different one.

RESOLUTION 5. — As soon as a set of fundamental constants has been chosen, it appears desirable that a set of correction factors similar to De Sitter's be introduced, in order to facilitate the evaluation of the effects of small corrections to the values of the fundamental constants on the derived constants.

RESOLUTION 6. — We recommend that the study of astronomical constants be pursued systematically by the use of existing methods and the development of new methods, since the comparison of the results of widely differing methods is necessary for the discovery of the cause of the discrepancies which are at present apparent.

RESOLUTION 7. — Recognising the importance of recent contributions to our knowledge of the constants of the solar system by radar echo methods and by the use of space probes, we urge the further development of such research.

RESOLUTION 8. — We direct the attention of the authorities concerned to the importance of creating artificial satellites of the Moon, very desirably observable by varied means, to obtain reliable information concerning the Moon's gravitational field and geometrical form. We further recommend that specialists in celestial mechanics consider and specify the best values for the orbital elements of such satellites in order to obtain the most reliable data for the Moon's gravitational field with the least number of satellites.

