

D IAU Resolutions Adopted at the XXVIIth General Assembly (2009)

D.1 IAU 2009 Resolution B2 on IAU 2009 astronomical constants

The XXVII General Assembly of International Astronomical Union,
Considering

1. the need for a self-consistent set of accurate numerical standards for use in astronomy,
2. that improved values of astronomical constants have been derived from recent observations and published in refereed journals, and
3. that conventional values have been adopted by IAU GA 2000 and IAU GA 2006 resolutions for a number of astronomical quantities,

Recognizing

1. the continuing need for a set of Current Best Estimates (CBEs) of astronomical constants, and
2. the need for an operational service to the astronomical community to maintain the CBEs

Recommends

1. that the list of previously published constants compiled in the report of the Working Group on Numerical Standards of Fundamental Astronomy (see <http://maia.usno.navy.mil/NSFA/CBE.html>) be adopted as the IAU (2009) System of Astronomical Constants.
2. that Current Best Estimates of Astronomical Constants be permanently maintained as an electronic document,
3. that, in order to ensure the integrity of the CBEs, IAU Division I develop a formal procedure to adopt new values and archive older versions of the CBEs, and
4. that the IAU establish within IAU Division I a permanent body to maintain the CBEs for fundamental astronomy.

D.2 IAU 2009 Resolution B3 on the Second Realization of the International Celestial Reference Frame

The XXVII General Assembly of International Astronomical Union,
noting

1. that Resolution B2 of the XXIII General Assembly (1997) resolved “That, as from 1 January 1998, the IAU celestial reference system shall be the International Celestial Reference System (ICRS)”,
2. that Resolution B2 of the XXIII General Assembly (1997) resolved that the “fundamental reference frame shall be the International Celestial Reference Frame (ICRF) constructed by the IAU Working Group on Reference Frames”,
3. that Resolution B2 of the XXIII General Assembly (1997) resolved that the “That IERS should take appropriate measures, in conjunction with the IAU Working Group on reference frames, to maintain the ICRF and its ties to the reference frames at other wavelengths”,
4. that Resolution B7 of the XXIII General Assembly (1997) recommended “high-precision astronomical observing programs be organized in such a way that astronomical reference systems can be maintained at the highest possible accuracy for both northern and southern hemispheres”,
5. that Resolution B1.1 of the XIV General Assembly (2000) recognized “the importance of continuing operational observations made with Very Long Baseline (VLBI) to maintain the ICRF”,

Recognizing

1. that since the establishment of the ICRF, continued VLBI observations of ICRF sources have more than tripled the number of source observations,
2. that since the establishment of the ICRF, continued VLBI observations of extragalactic sources have significantly increased the number of sources whose positions are known with a high degree of accuracy,
3. that since the establishment of the ICRF, improved instrumentation, observation strategies, and application of state-of-the-art astrophysical and geophysical models have significantly improved both the data quality and analysis of the entire relevant astrometric and geodetic VLBI data set,

4. that a working group on the ICRF formed by the International Earth Rotation and Reference Systems Service (IERS) and the International VLBI Service for Geodesy and Astrometry (IVS), in conjunction with the IAU Division I Working Group on the Second Realization of the International Celestial Reference Frame has finalized a prospective second realization of the ICRF in a coordinate frame aligned to that of the ICRF to within the tolerance of the errors in the latter (see note 1),
5. that the prospective second realization of the ICRF as presented by the IAU Working Group on the Second Realization of the International Celestial Reference Frame represents a significant improvement in terms of source selection, coordinate accuracy, and total number of sources, and thus represents a significant improvement in the fundamental reference frame realization of the ICRS beyond the ICRF adopted by the XXIII General Assembly (1997),

Resolves

1. that from 01 January 2010 the fundamental astrometric realization of the International Celestial Reference System (ICRS) shall be the Second Realization of the International Celestial Reference Frame (ICRF2) as constructed by the IERS/IVS working group on the ICRF in conjunction with the IAU Division I Working Group on the Second Realization of the International Celestial Reference Frame (see note 1),
2. that the organizations responsible for astrometric and geodetic VLBI observing programs (e.g. IERS, IVS) take appropriate measures to continue existing and develop improved VLBI observing and analysis programs to both maintain and improve ICRF2,
3. that the IERS, together with other relevant organizations continue efforts to improve and densify high accuracy reference frames defined at other wavelengths and continue to improve ties between these reference frames and ICRF2.

Note 1: The Second Realization of the International Celestial Reference Frame by Very Long Baseline Interferometry, Presented on behalf of the IERS / IVS Working Group, Alan Fey and David Gordon (eds.). (IERS Technical Note ; 35) Frankfurt am Main: Verlag des Bundesamts für Kartographie und Geodäsie, 2009. See www.iers.org/MainDisp.csl?pid=46-25772¹ or hpiers.obspm.fr/icrs-pc/.

¹New URL www.iers.org/TN35