

COMMISSION 52

RELATIVITY IN FUNDAMENTAL ASTRONOMY

RELATIVITÉ DANS
ASTRONOMIE FONDAMENTALE

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COMMISSION 52 WORKING GROUPS

none

TRIENNIAL REPORT 2009–2012

1. Introduction

The IAU Commission 52 "Relativity in Fundamental Astronomy" (RIFA) has been established during the 26th General Assembly of the IAU (Prague, 2006). The general scientific goals of the Commission were identified as:

- clarify geometrical and dynamical concepts of Fundamental Astronomy within a relativistic framework,
- provide adequate mathematical and physical formulations to be used in Fundamental Astronomy,
- deepen the understanding of the above results among astronomers and students in astronomy,
- promote research needed to accomplish these tasks.

In September 2011 the Commission has 72 full members. The web page of the Commission is at <http://astro.geo.tu-dresden.de/RIFA>.

2. Developments 2009–2012

When starting its work in 2006, the Commission had identified three scientific topics to consider first:

1. Units of measurements for astronomical quantities in the relativistic context;
2. Astronomical units in the relativistic framework;
3. Time-dependent ecliptic in the GCRS.

Topic 1 has been mostly carried out over the previous triennium and led to publications; Topic 2 is being considered over this triennium, and resulted in a Resolution proposed by the Division 1 working group Numerical Standards in Fundamental Astronomy; Topic 3 has not been formalized as a task group at this time, reflexion is ongoing considering the implications of IAU Resolution B1 (2006).

Although discussions on these scientific issues took place within the Organizing Committee, the Commission did not undertake new projects in a formalized manner over the period covered by this report and the President takes responsibility for this situation. Nevertheless, many members of the Commission were active in relation to these topics and to other RIFA-related topics, some examples follow:

- The discussion on astronomical units led to avoid considering redefinition in a relativistic framework, but to propose a new conventional definition of the astronomical unit of length as a multiple of the meter. This leads to the abandon of the "System of astronomical constants" based on the Gaussian gravitational constant k .

- The review of models or development of new models for space geodesy and other space applications, e.g. GAIA and Lunar Laser Ranging.

- The work on the improvement of the relativistic formulations (e.g. coordinate time transformations) and of the semantics of the IERS Conventions has been continued. This appears in the 2010 edition of the Conventions (Petit & Luzum (2010)).

The Commission has also taken part to the Division 1 subcommittee, which was set-up to discuss the future structure of the Division.

G rard Petit
President of the Commission

Reference

Petit, G. & Luzum, B., (eds.), 2010, IERS Conventions (2010), IERS Technical Note 36, Verlag des BKG, Frankfurt/Main.