

**Report of CCTF Working Group on algorithms (WG Algo)
to the 20th session of the CCTF
(17-18 September 2015)**

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1. Introduction

CCTF WG-Algo's term began at the last Meeting of the CCTF in September 2012.

The Terms of Reference of this WG are;

- a) to promote and support the development and improvement of the mathematical algorithms for the treatment of Time and Frequency measures used to establish a time scale, to characterize clock behaviour, or to any other applications that may arise,
- b) to help the dissemination of the developed algorithms and tools for allowing their correct use in Time and Frequency metrology,
- c) to support the modernization and the improvement, whenever necessary, of the TAI algorithm,
- d) to assist developing or new laboratories in the correct understanding and implementation of the Time and Frequency algorithms,
- e) to support the correct understanding and application of time algorithms also in other fields (e.g. navigation, telecommunication) where they may be necessary,
- f) to establish temporary ad-hoc study groups to analyse some specific problems, whenever necessary; these study groups should report to the working group, and
- g) to organize the "Time Scale Algorithm Symposium" as a mean to support the scientific community to identify new needs, to devise, develop, and disseminate algorithms.

And the memberships are;

- a) representatives of the laboratories contributing to TAI with expertise or interest in algorithms,
- b) the individual responsible for TAI at the BIPM,
- c) the members of the BIPM Time Department devoted to the TAI algorithm, one of them acting as the WG secretary,
- d) members of other organisations or institutions interested in developing and using time algorithms.

Currently, WG-algo consists of 18 members.

2. Symposium

Organizing the "VI International Time Scale Algorithm Symposium" was one important task of this working group. The aims of the symposium, which took place September 9-11, were to offer an overview of the different topics and to promote the exchange of experiences among scientists from different fields, including those new to the field. The tutorials offered students and colleagues the opportunity to review the basics of time scales algorithms, and spontaneous contributions. It had been seven years since the last symposium which was held at ROA in Spain in 2008. Thanks to active discussion among the SOC members and the keen support of the BIPM secretary desk, the full program consisted one tutorial day of 8 invited lectures and a full two days' symposium including 5 invited presentations and 25 contributions. There were about 70 registered people, including 4 students, gathered from more than 30 different countries.

Funding for this symposium and tutorials comes from registration fees and the generous financial support of NICT and ONRG (Office of Naval Research, Global), to whom we are deeply grateful.

3. Other activities

At the end of 2013 the CCTF Working Group on algorithms was solicited by the BIPM Time Department for the reviewing and validation of a report on the new weighting algorithm. The WG supported the new algorithm, and it has been applied officially since January 2014.