



2019 IEEE INTERNATIONAL WORKSHOP ON

Metrology for AeroSpace

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CALL FOR PAPERS

for the Special Session on

RELATIVISTIC METROLOGY

ABSTRACT

Among the quantities whose measurement metrology is involved in, length and time surely play an important role. Indeed, since more than a century their status and role drastically changed: Einstein major theories of special and general relativity implied a deep rethinking, which can be roughly summarized by introducing a 'new' entity, the 'spacetime' (new geometry: special relativity), which is curved and dynamic (general relativity). The consequences associated to this change are important, and still today they cannot be said to be totally unfolded. This is especially true on the experimental side: testable consequences of relativity are usually small at the scales accessible by direct (i.e., non astrophysical or cosmological) investigation. Yet considerable progress has come from several directions, and today some of these consequences are gradually entering the accessible domain, not to say everyday life: the Global Positioning System (GPS) and more in general Global Navigation Satellite Systems (GNSS), to be fully exploited, require careful consideration of at least the biggest among these tiny effects.

We are therefore assisting to what can be termed as "Relativistic metrology": the precise measurement of quantities related to spacetime dynamics and, therefore, to gravitational dynamics. Precision means knowledge of possible tiny disturbing effects, and this along the years spurred many research and many technological advances. The session will concentrate on the various basic quantities to be precisely measured, along with the related scientific and technological issues. The focus, whenever possible, will be however placed on fundamental aspects.

TOPICS

Among the various topics expected to be covered in this session, we can point out:

- Measurement of time (and frequency);
- Measurement of length;
- Geodesy;
- Navigation;
- Astronomy and astrometry;
- Fundamental Physics tests in space.

ORGANIZERS



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