

The Digital Revolution, also for Time Scales

This document is a trailer

The full text is open access on <https://arxiv.org/submit/4934709>

Claudio E. Calosso

Istituto Nazionale di Ricerca Metrologica (INRIM)

Torino, Italy

c.calosso@inrim.it

Summary — This work focuses on the generation of a composite clock for time scales and shows the advantages of a more recent digital approach with respect to a traditional analog one. A digital approach directly processes the information contained into the clock sinusoids, instead of the sinusoids themselves and leads to significant advantages in terms of reliability, performance, complexity, flexibility, size, power consumption and cost. A practical example based on a new digital instrument is provided to show how it is possible to combine state-of-the-art clocks from the Oscillator Imp platform at FEMTO-ST and FEMTO Engineering (Besançon, France).

Keywords — time scale; composite clock; digital electronics; reliability.