ID de Contribution: **1** Type: **Non spécifié**

An Information System for the french Time and Frequency Research Infrastructure REFIMEVE+ : setup and applications

jeudi 30 novembre 2023 11:00 (1h 30m)

The evolution of atomic clock performances over the last decades has stimulated the development of novel time/frequency transfer techniques. The most matured and operational techniques aim at almost continuous clock comparisons. These transfer techniques, using fiber links or free-space links, allow for the comparison of the means of comparison with unprecedented resolution, realizing stringent tests of their accuracy and unveiling bias and perturbations that might be related to their respective environmental constraints.

The fiber network REFIMEVE is a novel infrastructure that interconnects four European NMIs including SYRTE by fiber links, and about 30 academic laboratories as user. REFIMEVE is interconnected with the Italian Quantum Backbone (IQB). More fiber network for T/F metrology are expected to emerge in Europe in the upcoming years.

As a national research infrastructure and in the frame of the EU policy of open data proposed by Clonets-DS, it becomes essential to design a data service to characterize the performances of the disseminated signal and to implement robust comparison procedures, available to the clock's comparison ecosystem, to the users connected physically to REFIMEVE, and to academics interested in REFIMEVE data.

To meet these objectives, we are building a scientific Information System which is the purpose of this seminar. I will present the working methodology together with with some key concepts of the information systems I built. Then I will describe the current available setup. Finally, I will show its first scientific usages, from the scientific supervision of the network and show some prospects for earth science analysis.

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