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Optical Frequency Standard Dissemination with the REFIMEVE+ project: a tool at hand for ultra-stable and accurate measurements

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After more than 15 years of development, the frequency transfer of optical frequency standards through coherent optical fiber links overcomes by several orders of magnitude other dissemination techniques, such as GPS techniques for instance. This technique is now established over ranges of 1000s of km, enabling unprecedented resolution for clocks comparisons. By opening a new era of optical metrology, coherent optical fiber links create opportunities for a wide area of application for precise measurements in physical laboratories, such as comb-assisted spectroscopy, geodesy or test of general relativity for instance. To that aim, our groups have explored several dissemination techniques and the way to combine them to improve their reliability. The REFIMEVE+ project aims to build a wide scale fiber network in France (see figure), highly reliable and robust, capable at the same time of comparing the best optical clocks and of disseminating an optical frequency standard to about 20 research laboratories. At the conference, we will report on the development of this efficient metrological network in collaboration with RENATER. We will give a focus on the realization of the network core with equipment at the state-of-the-art, enabling multiple links dissemination at once with enhanced performances of the transfer.

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Choix de session parallèle

Autres: Division PAMO

Authors: Dr CANTIN, Etienne (LNE-SYRTE - LPL); Dr LOPEZ, Olivier (LPL); Dr GUILLOU-CAMARGO, Fabiola (Muquans); Dr MENORET, Vincent (Muquans); QUINTIN, Nicolas (RENATER); TONNES, Mads (LNE-SYRTE); Dr DESRUELLE, Bruno (Muquans); Dr CHARDONNET, Christian (LPL); AMY-KLEIN, Anne (LPL - Université Paris 13 - CNRS); Dr POTTIE, Paul-Eric (LNE-SYRTE)

Orateur: Dr CANTIN, Etienne (LNE-SYRTE - LPL)

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