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Determination of the fine structure constant with atomic interferometry and Bloch oscillations. PIERRE CLADÉ, MALO CADORET, ESTEFANIA DE MIRANDES, SAIDA GUELLATI-KHÉLIFA, CATHERINE SCHWOB, FRANÇOIS NEZ, LUCILE JULIEN, FRANÇOIS BIRABEN, Laboratoire Kastler Brossel - CNRS — We report a new measurement of the recoil of ^{87}Rb atoms using atomic interferometry and Bloch oscillations of ultracold atoms in an accelerated lattice. For the first time, we combine the high efficiency of Bloch oscillations with the sensitivity of Ramsey-Bordé interferometer. Our measurement with a statistical uncertainty of 3.4 ppb combined with a careful study of systematic effects (3.3 ppb) leads to a value of the fine-structure constant with an uncertainty below 5 ppb.

Pierre Cladé
Laboratoire Kastler Brossel - CNRS

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