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STE-QUEST: a M-class mission proposal to test the equivalence principle at the level of 10^{-17}

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The Space Time Explorer and QUantum Equivalence principle Space Test (STE-QUEST) is a M-class mission proposal that has recently been submitted to the M7 call in ESA's science program. This proposal has successfully passed the phase 1 selection and is currently under investigation for the phase 2. STE-QUEST will provide an atom interferometric measurement of the universality of free fall in space by measuring the differential acceleration between Rb and K atoms. It will reach the impressive level of 10^{-17} in measuring the Etovos parameter, improving by 2 orders of magnitude the most recent results provided by the MICROSCOPE space-mission. In this presentation, I will present the principles of the STE-QUEST measurement, the main characteristic of the mission and discuss the main scientific expected outcome.

Auteur principal: HEES, Aurelien (SYRTE - Observatoire de Paris)

Co-auteurs: WOLF, Peter (SYRTE, Observatoire de Paris, CNRS, LNE, UPMC); M. BATTELIER, Baptiste (Institut d'Optique de Bordeaux); M. CORGIER, Robin (SYRTE - Observatoire de Paris); GUÉ, Jordan (SYRTE, Observatoire de Paris); METRIS, Gilles (Géoazur (CNRS - Observatoire de la Côte d'Azur - Université de Nice))

Orateur: HEES, Aurelien (SYRTE - Observatoire de Paris)