

171Yb+ optical clock at NPL for frequency metrology and tests of fundamental physics

Monday, 16 October 2023 16:00 (30 minutes)

We will report on absolute E3 frequency measurements and E3/E2 optical frequency ratio measurements in $^{171}\text{Yb}^+$, local $^{171}\text{Yb}^+ / ^{87}\text{Sr}$ clock frequency ratios, related uncertainty budgets, and improvements in automation and robust operation of the $^{171}\text{Yb}^+$ clock system at NPL. We will also show how these measurement results have been used to constrain temporal variation of the fine structure constant and exclude regions of parameter space in theories beyond the Standard Model, such as those which include ultralight scalar dark matter.

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Session Classification: Optical Ion Clocks II

Track Classification: Molecular, Atomic, Ion and Nuclear Clocks