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Alpha: Measurement of the fine structure constant as test of the Standard Model

Comparison of direct measurements of the fine structure constant via measuring the recoil velocity of an atom that scattered a photon from a laser beam, and those obtained from the electron's g-2, are some of the most comprehensive tests of the Standard Model. Based on our 2018 measurement (Parker et al., Science 360, 191), that is currently the most accurate, we report on a project to make a 10-20 fold improvement by taking the control over the spatial structure of the laser beam to the extreme.

Primary frontier topic

Rare Processes and Precision Measurements Frontier

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