Physics > Atomic Physics

Frequency Comb Velocity-Modulation Spectroscopy

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We have demonstrated a new technique that provides massively parallel comb spectroscopy sensitive specifically to ions through the combination of cavity-enhanced direct frequency comb spectroscopy with velocity modulation spectroscopy. Using this novel system, we have measured electronic transitions of HfF+ and achieved a fractional absorption sensitivity of 3 x 10-7 recorded over 1500 simultaneous channels spanning 150 cm-1 around 800 nm with an absolute frequency accuracy of 30 MHz (0.001 cm-1). A fully sampled spectrum consisting of interleaved measurements is acquired in 30 minutes.

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