PRECISION LASER SPECTROSCOPY OF H_3^+

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The high-resolution sub-Doppler Lamb dips of the ν_2 fundamental band transitions of H_3^+ have been observed using an extended negative glow discharge tube as an ion source and a periodically poled lithium niobate optical parametric oscillator as a radiation source.[a] The absolute frequencies of five transitions were measured to an accuracy of 250 kHz using a fiber optical frequency comb. In addition, we measured the homogeneous linewidths of these lines. Physical significance of these results will be discussed in terms of collisional processes.

[a] H.-C. Chen, C.-Y. Hsiao, J.-L. Peng, T. Amano, and J.-T. Shy, *Phys. Rev. Lett.*, **109**, 263002 (2012)