

Abstract Submitted
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Laser spectroscopy of fine-structure splittings in the 2^3P_J levels of ^4He ¹ X. ZHENG, Y. R. SUN, J.-J. CHEN, S.-M. HU, University of Science and Tech of China — The fine-structure splittings of the 2^3P_J ($J=0, 1, 2$) levels of ^4He is of great interest for tests of quantum electrodynamics and for the determination of the fine structure constant α . Here we report our recent studies on the fine-structure splitting intervals. The metastable helium atoms are prepared by RF discharge and are collimated by transverse cooling. The laser spectroscopy is performed via 2^3P_J - 2^3S_1 transitions at 1083nm. The 2^3P_0 - 2^3P_2 and 2^3P_1 - 2^3P_2 intervals are determined to be 31 908 130.98(13) kHz and 2 291 177.56(19) kHz, respectively. Both intervals show good agreements with the theoretical calculations. Progress towards measurements on the absolute frequency of 2^3P_J - 2^3S_1 on ^4He will be reported.

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