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Accession number:20122915250848
Title:Direct measurement of positronium hyperfine structure: ˜ A new horizon of precision spectroscopy using gyrotrons
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Source title:Journal of Infrared, Millimeter, and Terahertz Waves
Abbreviated source title:J. Infrared. Millim. Terahertz Waves
Volume:33
Issue:7
Monograph title:High Power THz Technologies Opened by High Frequency Gyrotrons
Issue date:July 2012
Publication year:2012
Pages:766-776
Language:English
ISSN:18666892
E-ISSN:18666906
Document type:Journal article (JA)
Publisher:Springer New York, 233 Springer Street, New York, NY 10013-1578, United States
Abstract:Positronium is an ideal system for research on QED, especially in a bound state. A discrepancy (3.9s) is found recently between measured HFS values and the QED prediction (including up-to O(α³ log α⁻¹), where a is the fine-structure constant.). It might be due to a contribution of unknown new physics or common systematic problems in all the previous measurements. A new method to measure HFS directly is performed using a high power gyrotron. The transition from ortho-positronium to para-positronium has been observed with 5 σ CL, which is the first observation of M1 transition in (sub)Terahertz region. New technologies of high power gyrotrons are developed for precision spectroscopy. © The Author(s) 2012.
Number of references:15
Main heading:Gyrotrons
Controlled terms:Positrons
Uncontrolled terms:Bound state - Direct measurement - Fine structure constants - High power gyrotrons - Hyperfine splittings - Hyperfine structure - Ideal systems - New physics - Positronium - Precision spectroscopy - Terahertz region
Classification code:711.1 Electromagnetic Waves in Different Media - 931.3 Atomic and Molecular Physics
DOI:10.1007/s10762-011-9864-8