

Abstract Submitted
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Subnatural spectroscopy by two-photon frequency modulation

LEI FENG, PENGXIONG LI, Fudan University, LIANG JIANG, California Institute of Technology, YANHONG XIAO, Fudan University — We demonstrate a two-photon frequency-modulation subnatural spectroscopy technique. The two levels for the target resonance are both resonantly coupled to an auxiliary level by two phase coherent lasers under common phase modulation. Cross correlation in the converted amplitude modulation of the two lasers was measured versus detuning. Linewidth thirty times narrower than the measured natural width (zero laser power width) of the target resonance was experimentally achieved using Coherent-Population-Trapping as a proof-of-principle system. Dependence of linewidth on laser power, modulation depth and frequency was investigated. Experimental results agree well with theoretical model. This technique is generally applicable to many systems for precision spectroscopy, metrology and imaging.

Lei Feng
Fudan University

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