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Shifts due to distant neighboring resonances for laser measurements of 2^3S_1-to-2^3P_J transitions of helium[1] A. MARSMAN, E.A. HESSELS, M. HORBATSCH, York University — Quantum-mechanical interference between transitions from the metastable $2^3S_1 m_J$=0 state to $2^3P_1 m_J$=±1 and to $2^3P_2 m_J$=±1 is shown to cause shifts in these resonances, despite the fact that the resonances are separated by more than 1000 natural widths. The 2^3P_1-to-2^3P_2 fine-structure interval can be determined from the difference of these laser transitions, and a comparison between experiment and theory for this interval allows for precise tests of the quantum-electrodynamic (QED) theory used to calculate the interval. The shifts described here are large enough to be important for this test of QED and therefore to affect the continuing program of determining the fine-structure constant from comparison between accurate experimental measurements and theoretical calculations of the helium 2^3P energy intervals.

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Marko Horbatsch
York University

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