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Microwave Control of Spin Dynamics in F=1 Sodium Spinor Bose-Einstein Condensates[1] QIMIN ZHANG, SHAN ZHONG, JIANWEN JIE, QINGZE GUAN, ISAIAH MORGENSTERN, HIO GIAP OOI, ANITA BHAGAT, DELARAM NEMATOLLAHI, HYOYEON LEE, D. BLUME, ARNE SCHWETTMANN, Univ of Oklahoma — We present our latest experimental data on controlling spin dynamics in F=1 sodium spinor Bose-Einstein condensates via microwave dressing. By applying quenches and time-dependent microwave pulse sequences, we implement nonlinear atom interferometry in spin-space in the long evolution time regime, $t \gg h/c$, where c is the spin-dependent interaction energy. We also investigate the breakdown of commonly made approximations such as the single-mode approximation and the undepleted pump approximation for certain parameters.

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