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Coherent ultrafast spin flip in a 2D electron gas[1] CAREY PHELPS, TIMOTHY SWEENEY, HAILIN WANG, Department of Physics and Oregon Center for Optics, University of Oregon, Eugene, OR 97405 — We report the experimental demonstration of ultrafast electron spin flip in a modulation doped CdTe quantum well. Complete spin flip is realized with an off-resonant laser pulse of 2 ps in duration. The effective pi-pulse flips the electron spins with respect to an axis that is orthogonal to both the external magnetic field (Voigt geometry) and the sample growth axis. The realization of the ultrafast pi-pulse opens up a new avenue for protecting electron spins from decoherence with dynamical decoupling.

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Hailin Wang
Department of Physics and Oregon Center for Optics,
University of Oregon, Eugene, OR 97405

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