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Electrically Probing Nuclear Spin Polarization in an InSb Single Quantum Well[1] H.W. LIU, ERATO-JST and Jilin Univ, K.F. YANG, ERATO-JST, T.D. MISHIMA, M.B. SANTOS, Oklahoma Univ, Y. HIRAYAMA, ERATO-JST and Tohoku Univ — We perform tilted-magnetic-field and resistively detected nuclear magnetic resonance (RDNMR) measurements of a symmetrically doped InSb single quantum well. Two types of Landau level crossings are presented in magnetotransport spectra by tilting the quantum well, one is characterized by a collapse of longitudinal resistance minimum and another shows resistance spikes within persistent resistance minimum. A small rf field with the frequency sweeping through the Larmor resonance of individual nuclear isotopes is applied to probe the nuclear spin polarization at or near these crosses. By flowing a relatively large current, NMR signals of high nuclear spin isotopes of both In and Sb at the resistance spikes around filling factor 2 are detected using the RDNMR measurement. We interpret this as evidence that energetically degenerate domains with different pseudospin polarization are requisite for dynamic nuclear polarization at the cross.

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