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**Spin injection from into InSb from CoFe** YONG-JAE KIM, MARTIN RUDOLPH, R.L. KALLAHER, J.J. HEREMANS, Virginia Tech — The strong spin-orbit interaction in InSb is an asset for spin manipulation using electric fields. In order to electrically characterize spin injection and detection in InSb, we experimentally investigate spin injection into InSb from ferromagnetic CoFe electrodes, via non-local spin valve measurements at low temperature. We observe non-local transresistance switching around zero in-plane external magnetic field. We characterize the magnetic properties of the CoFe layer by the Hall signal of the fringing fields and confirm 3-state switching. We verify that the non-local signal is not related to the physical or geometrical magnetoresistance due to the CoFe fringing fields. The non-local spin valve signal is, as typical, dependent on the specific CoFe/InSb interfaces, while the temperature dependence points to a contribution beyond the spin coherence length. We further observe a modification of weak-antilocalization by spin injected carriers and the same phenomenon may contribute to the spin valve transresistance (partial support from DOE DE-FG02-08ER46532).

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