

Large inverted band-gap in strained three-layer InAs/GaSb quantum wells

Wednesday, 6 July 2022 17:35 (15)

Quantum spin Hall insulators (QSHIs) based on HgTe and three-layer InAs/GaSb quantum wells (QWs) have comparable bulk band-gaps of about 10-18 meV. The former however features a band-gap vanishing with temperature, while the gap in InAs/GaSb QSHIs is rather temperature-independent. We report on the realization of large inverted band-gap in strained three-layer InAs/GaSb QWs. By temperature-dependent magneto-transport measurements of gated Hall bar devices, we extract a gap as high as 45 meV. Combining local and non-local measurements, we attribute the edge conductivity observed at temperatures up to 40 K to the edge channels, of possible topological origin, with equilibration lengths of a few micrometers. Our findings pave the way toward manipulating edge transport at high temperatures in QW heterostructures.

Primary author(s) : JOUAULT, Benoit (cnrs)

Co-author(s) : Mr AVOGADRI, Colin; Dr TEPPE, Frederic (cnrs)

Presenter(s) : JOUAULT, Benoit (cnrs)

Session Classification : Wed 06/07 Poster Session/ ID: