Wild and Crazy Ideas

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Abstract

With the 6.1 Å materials, last years wild and crazy ideas are this years success stories in research leading directly to products. This development is surely the track that we have seen IR lasers, detectors, soon for low-power, high-speed electronics. The new set of wild and crazy ideas center on some of the unique properties of InAs/GaSb/AlSb. The combination of large Rashba splittings of the spins in the InAs quantum wells[1-3] and the superconductivity[4] in these wells gives us a set of phenomena that promise to provide a whole sequence of new devices. Patterned nanomagnets[5, 6] offer another possibility with high magnetic fields gradients that can interact with the electrons with their relatively high g values, spin splittings and long mean free paths. We will discuss both the experimental facts and the device implications of this large number of arrows in the InAs quiver.

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