Spin-dependent resistivity at transitions between integer quantum Hall states

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— The longitudinal resistivity at transitions between integer quantum Hall states is found to depend strongly on the spin orientation of the corresponding partially-filled Landau level in two-dimensional electrons confined to narrow AlAs quantum wells. By tilting the sample with respect to the applied magnetic field, different Landau level spin branches can be brought to and driven past energetic coincidence. The result is a flip of the spin-orientation for the energy level corresponding to a given quantum Hall transition that is accompanied by a change in resistivity. This change can be as much as an order of magnitude. We discuss possible causes and suggest a new explanation for spike-like features, associated with quantum Hall ferromagnetic transitions, observed at the edges of quantum Hall minima.