van Wees Replies: In their Comment\textsuperscript{1} the authors give an explanation for the suppression of scattering between edge channels in high magnetic fields. They introduce a plausible model, where the scattering between the edge channels is induced by the curvature of the 2DEG boundary in and near the point contacts. With a value for the curvature radius, estimated from the experimental geometry, they find a threshold value for the magnetic field which is near the experimentally observed threshold field for adiabatic transport.

Glazman and Jonson’s model clearly shows that adiabatic transport is induced by the application of a sufficiently high magnetic field. However, I have a few remarks in relation to the application of the model to explain the experimentally observed threshold fields.

First, I emphasize that a depletion region is present at the 2DEG boundary. In this region, which has an estimated width of 100–200 nm, an electric field $E \approx 5 \times 10^4$–$10^5$ V/m is present. Since the experimentally observed threshold fields for adiabatic transport\textsuperscript{2–4} are 1–2 T, this corresponds to a cyclotron radius $l_c$ of the order of 40 nm. This means that the transition to adiabatic transport takes place in the regime where the (classical) motion of the electrons is in cyclotron orbits which drift along equipotential lines. Quantum mechanically this corresponds with the electron flow through edge channels whose center coordinates are located at different equipotential lines. In magnetic fields for which $\hbar \omega_c/eE > l_c$ (this is the case for fields $> 1–2$ T), the overlap of the wave functions of adjacent edge channels is significantly reduced. In this case I expect that in addition to the 2DEG boundary curvature, which is the only parameter in Glazman and Jonson’s model, the shape of the depletion region will be an important parameter as well in determining the threshold value for adiabatic transport. One expects that a wider depletion region will favor adiabatic transport.

Second, in the split-gate point contacts employed by us and other groups the reduction of the width of the point contacts is accompanied by the formation of a potential barrier in the point contacts. In the experiments on the anomalous integer quantum Hall effect (AIQHE) this barrier can be relatively high (about half the Fermi energy), and is therefore expected to influence the adiabaticity of the transport. This is indeed visible in the experiments on the AIQHE, where at more negative gate voltages (and higher barriers) higher magnetic fields are required to obtain adiabatic transport.\textsuperscript{4}

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\textsuperscript{2}P. H. Beton \textit{et al.} (to be published).
\textsuperscript{4}B. J. van Wees \textit{et al.} (to be published).