Supplementary Information

Supplementary Figure 1 | Measured local and nonlocal resistance without magnetic field. Local resistance $R_{xx}$ (a) and non-local resistance $R_{nl}$ (b) as functions of $V_{tg}$ at $V_{bg}=3$ V and $B=0$ T, $T=0.3$ K. The non-local resistance $R_{nl}$ shown here is multiplied by a factor of hundred. The data shown in this supplementary file are all from the same Sample A as that in the main text.
Supplementary Figure 2 | Temperature dependence of the local and nonlocal resistance. (a)-(g) Local resistance $R_{xx}$ and nonlocal resistance $R_{nl}$ versus $V_{tg}$ at fixed bottom surface filling factor $\nu_b=1/2$ (dashed) and -1/2 (solid) measured at $B=18$ T at different temperatures. At total filling factor $\nu=0$ states, the nonlocal resistance $R_{nl}$ decreases more rapidly with increasing temperature while the local resistance $R_{xx}$ maintains large value up to 50 K.
Supplementary Figure 3 | Temperature dependence of the longitudinal and Hall resistivity. (a)-(g) Longitudinal conductivity $\sigma_{xx}$ and Hall conductivity $\sigma_{xy}$ versus $V_{tg}$ at fixed bottom surface filling factor $\nu_b=1/2$ (dashed) and $-1/2$ (solid) measured at $B=18$ T at different temperatures. (h) and (i) show $\sigma_{xx}$ versus $\sigma_{xy}$ at $\nu_b=-1/2$ and $1/2$ respectively at different temperatures.