Erratum

Equality of the Bulk and Edge Hall Conductances in a Mobility Gap

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In Sect. 3.6, “Proof of Lemma 4,” the min-max principle is applied incorrectly to estimate the distribution function of M_ζ on the way to proving (3.37), i.e., that

$$\sum_{\zeta \in \tilde{\mathcal{E}}_\Delta} M_\zeta < \infty.$$

However, there is a simple proof of (3.37) based on the following estimate obtained in the penultimate line of the second equation following (3.37):

$$M_\zeta^{-2} \geq \frac{1}{4D_\varepsilon^2} (\psi_\zeta, e^{(\mu-2\varepsilon)|x|} \psi_\zeta).$$

Indeed, we then have

$$M_\zeta \leq 2D_\varepsilon \left[(\psi_\zeta, e^{\delta|x|} \psi_\zeta) \right]^{-\frac{1}{2}} \leq 2D_\varepsilon (\psi_\zeta, e^{-\frac{1}{2}\delta|x|} \psi_\zeta),$$

with $\delta = \mu - 2\varepsilon$. In the last step we have applied Jensen’s inequality with the convex function $t \rightarrow t^{-\frac{1}{2}}$. As $\{\psi_\zeta : \zeta \in \tilde{\mathcal{E}}_\Delta\}$ are ortho-normal, we conclude that

$$\sum_{\zeta \in \tilde{\mathcal{E}}_\Delta} M_\zeta \leq 2D_\varepsilon \operatorname{tr} e^{-\frac{1}{2}\delta|x|} < \infty,$$

which is (3.37).

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