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The Coulomb drag effect induced by the third cumulant of current

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The Coulomb drag effect arises due to electron-electron interactions, when two metallic conductors are placed in close vicinity to each other. It manifests itself as a charge current or voltage drop induced in one of the conductors, if the current flows through the second one. Often it can be interpreted as an effect of rectification of the non-equilibrium quantum noise of current. Here, we investigate the Coulomb drag effect in mesoscopic electrical circuits and show that it can be mediated by classical fluctuations of the circuit collective mode. Moreover, by considering this phenomenon in the context of the full counting statistics of charge transport we demonstrate that not only the noise power, but also the third cumulant of current may contribute to the drag current. We discuss the situations, where this contribution becomes dominant.

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