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Aharonov-Bohm Blockade in Magneto-Polaronic Tunneling of Strongly Correlated Electrons

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Abstract:

The magnetopolaron generalization of a Majorana-resonant-level model [1] in the case of single-electron transistor with symmetric tunnel couplings between g=1/2-Luttinger liquid leads [2,3] and quantum dot vibrating in the transverse external magnetic field) - leads to the unexpected (Aharonov-Bohm phase-driven) type of "magnetopolaron-assisted" resonant tunneling with strong interference between different virtual "vibronic" channels. As the result, in a sharp contrast with usual "polaronic" [2] (or usual magnetopolaronic [3]) blockade at zero-temperature for ultra-small frequencies of quantum vibrations - in the g=1/2-magnetopolaronic SET a complete compensation of magnetopolaronic blockade is impossible even by means of very high bias voltage (or temperatures)[1]. This phenomenon can be called as a novel "Aharonov-Bohm" type of magnetopolaronic blockade or simply as the "Aharonov-Bohm blockade" being specific for the g=1/2-magnetopolaronic SETs [1].

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