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Apparent pairing and subperiods in integer quantum Hall interferometers[1] BERND ROSENOW, GIOVANNI A. FRIGERI, ITP, University of Leipzig, DANIEL D. SCHERER, Niels Bohr Institute, University of Copenhagen, — We theoretically investigate the flux and gate voltage dependence of the conductance in an integer quantum Hall Fabry-Pérot interferometer, taking into account the interactions between the interfering edge mode, a second non-interfering edge mode, and the bulk. We obtain a halving of the flux periodicity, compared to the periodicity found in an interferometer without second edge mode, for weak bulk-edge coupling and sufficiently strong inter-edge interaction. Interestingly, the periodicity reduction occurs when the interferometer operates in the Aharonov-Bohm regime. Even in the regime of strong bulk-edge coupling, this behavior can be observed as a subperiodicity of the interference signal in the Coulomb dominated regime. We do not find evidence for a connection between a reduced flux period and electron pairing, though. Our results are relevant for the interpretation of recent experimental findings and can reproduce the observed features in the conductance.

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