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Persistent Currents in Higher Genus Materials and Structures DAVID SCHMELTZER, City College of CUNY, AVADH SAXENA, Los Alamos National Lab — Persistent charge and spin currents have been usually studied in an isolated ring. However, recent semiclassical calculations and an experiment performed on sixteen connected GaAS/GaAlAs rings provide motivation to study persistent currents in higher genus structures. To this end, we introduce Dirac's second class constraint to explore high genus materials and ring structures. As a specific example we apply this method to compute the persistent charge current in a system of coupled rings.

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