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Dyon proliferation in interacting quantum spin Hall edges[1] SHU-PING LEE, JOSEPH MACIEJKO, University of Alberta — We show that a quantum spin Hall system with intra-edge multiparticle backscattering and inter-edge exchange interactions exhibits a modular invariant zero-temperature phase diagram. We establish this through mapping to a classical 2D Coulomb gas with electrically and magnetically charged particles; strong coupling phases in the quantum edge problem correspond to the proliferation of various dyons in the Coulomb gas. Distinct dyon proliferated phases can be accessed by tuning the edge Luttinger parameters, for example using a split gate geometry.

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