

# Generalizing "Charge without Charge" to Obtain Classical Analogs of Short-Range Interactions

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## Abstract

Several decades ago, Wheeler and Misner presented a model of electric charge ("charge without charge") based on the topological trapping of electric field lines in wormholes. In this paper, which does not argue for or against the "charge without charge" concept, I describe some generalizations of this model which might serve as topological analogs of color charges and electroweak charges.

**Keywords:** charge, spacetime topology, wormhole, strong interactions, weak interactions

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**Additional Information:** This is an updated version of a paper that appeared previously on the author's website.