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Homology for quandles with partial group operations.

A quandle is a set that has a binary operation satisfying three conditions corresponding to the Reidemeister moves. A multiple conjugation quandle is a union of groups with the quandle operation restricting to conjugation on each group component, satisfying certain compatibilities between the group and quandle operations. The definition is motivated for coloring handlebody-link diagrams. In this talk, a homology theory for multiple conjugation quandles is presented, that unifies group and quandle homology theories. Algebraic aspects, such as extensions, are discussed, and degenerate subcomplexes are defined. Cocycle invariants are defined for handlebody-links using this homology theory. (Received August 06, 2015)