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„Configuration mapping spaces and point pushing maps“

Abstract:
Point-particles moving in a background space are mathematically modelled by configurations spaces. Data associated to the particles are incorporated by giving the configurations labels in a suitable state space. These spaces have seen much attention in topology starting with work of McDuff and Segal in the 1970s. In classical field theory, however, point-particles interact with fields, and mathematically these give rise to functions on the complement of a configuration, and thus to what we call 'configuration mapping spaces'. The moduli space of magnetic monopoles provides one such example. Another family of examples is given by branched covering spaces of the complex plane with prescribed holonomy, also known as Hurwitz spaces and were the object of study in Ellenberg, Venkatesh and Westerland's celebrated work on the Cohen-Lenstra heuristics.

In joint work with Martin Palmer we study configuration mapping spaces also of higher dimensional manifolds and most general 'fields'. Our studies led us also to investigate point pushing maps and the Birman exact sequence in higher dimensions.