

TITLE: Partial duality of hypermaps.

Abstract. Hypermaps differ from graphs on surfaces in a way that their edges are allowed to connect more than two vertices. Orientable hypermaps arise naturally in the Grothendieck's dessins d'enfants theory.

We introduce a collection of new operations on hypermaps, partial duality, which include the classical Euler-Poincaré dualities as particular cases. These operations generalize the partial duality for maps, or ribbon graphs, recently discovered in a connection with the knot theory.

Combinatorially hypermaps may be described in one of three ways: as three involutions on the set of flags (τ -model), or as three permutations of the set of half-edges (σ -model in orientable case), or as edge 3-colored graphs. We express partial duality in each of these models.

This is a joint work with Fabien Vignes-Tourneret (Lyon). The details are in [arXiv:1409.0632](https://arxiv.org/abs/1409.0632) [math.CO].