

Partial Twuality Polynomials

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Poincare duality $*$ and Petrie duality \times , as operators on ribbon graphs (cellular graph embeddings), generate a group of operators, or twualities, isomorphic to the symmetric group Σ_3 . Any of these twualities T can be restricted to a subset of edges A to give a partial twuality $G^{T|A}$. Recent papers with Jonathan Gross and Toufik Mansour introduce the *partial- T polynomial* of G , the generating function enumerating partial- T twuals of G by euler genus. Interpretation of partial twuals in terms of partial permutations in the monodromy of G allows computation of these polynomials for small examples. Various properties and examples of partial polynomials are discussed with particular attention to interpolating and log-concave behavior, as well as possible connections to Bollobás-Riordan polynomials.