Transitive factorizations of pairs of permutations and three-dimensional constellations

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Factorizations of pairs of permutations that generate the full symmetric group on n-symbols are shown to be in bijection with a certain family of three-dimensional 4-colored triangulations that generalize constellations. These spaces are ramified coverings of the three-dimensional sphere, branched over the n-unlink. We will present a generalization of the Riemann-Hurwitz formula, and identify the spaces that maximize the number of branching edges for a fixed number of sheets.