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The cohomology of partial quotients

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Partial quotients are topological analogues of toric varieties. A moment¬-angle complex Z_K is built from products of discs and circles glued together according to an associated simplicial complex K. The topology of these spaces is encoded in the combinatorics of K. Partial quotients are obtained from moment-angle complexes by taking the quotient of a torus action. Franz has shown that the cohomology module of partial quotients can be encoded in K, but there is no cup-product. Franz also showed that the cohomology is isomorphic as an algebra to a tor-algebra with a twisted product. So far there is no method to encode the cohomology algebra of partial quotients in the combinatorics of K and the matrix that corresponds to the torus action. We use combinatorial, algebraic and homotopy theoretic techniques to find a different model to do this. Joint work with Xin Fu and Jelena Grbić.