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On Prisms of Polytopes

The Tomotope provided the first well understood example of an abstract 4-polytope whose connection (monodromy) group was not a string C-group, and which also did not have a unique minimal regular cover. Conversely, we know that if the connection group of a polytope is a string C-group (if the polytope is *C-connected*), then the polytope will have a unique minimal regular cover. Since the discovery of the Tomotope, an active area of investigation has been determining which abstract d-polytopes are C-connected and the ways various constructions for abstract polytopes result in polytopes that do or do not possess unique minimal regular covers. In this talk we'll discuss recent work showing that the prism over every abstract polyhedron is C-connected, or equivalently, that it has a unique minimal regular cover. We will also describe a conjecture positing a general condition on the C-connectedness of prisms over polytopes that is independent of rank.