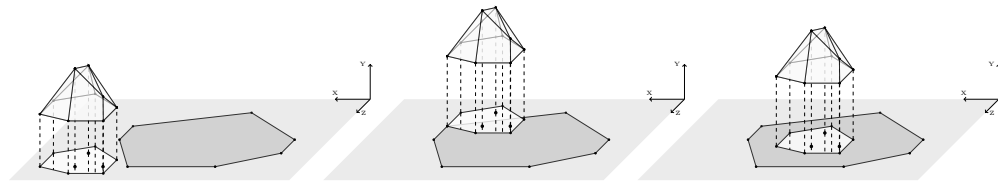
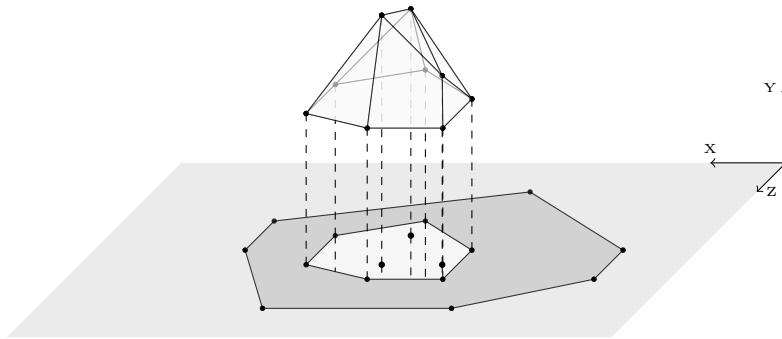


Projecting of an N dimensional polytope onto a $N - 1$ dimensional polytope

Andreas Orthey

We will visualize here the three different ways of how the projection of a 3-d polytope p onto a 2-d polytope q can affect the topology of q . The three cases are: I) p is not intersecting q and does not change the topology, II) p is intersecting the q and the boundary of q , but is not changing the topology of the q , and III) p cuts a hole into q changing the topology of q .



- (a) Polytope does not intersect walkable surface: No change
- (b) Polytope intersects, but not all vertices are inside the interior of the walkable surface: We need to split the walkable surface, to get a convex decomposition.
- (c) Polytope intersects and all vertices are inside the interior of the walkable surface: We need to split the surface, and the topology of the trajectory classes changes.