1125-05-303 **Federico Ardila***, San Francisco State University, **Hanner Bastidas**, Universidad del Valle, **Cesar Ceballos**, University of Vienna, and **John Guo**, San Francisco State University. *The configuration space of a robotic arm in a tunnel.*

We study the motion of a robotic arm inside a rectangular tunnel. We prove that the configuration space of all possible positions of the robot is a CAT(0) cubical complex. This allows us to use techniques from geometric group theory to find the optimal way of moving the arm from one position to another. We also compute the diameter of the configuration space, that is, the longest distance between two positions of the robot. The key ingredient in the proofs is the bijection between CAT(0) cubical complexes and "posets with inconsistent pairs". The talk will assume no previous knowledge of the subject and will be accessible to undergraduates. (Received August 24, 2016)