
The configuration space of a robotic arm in a tunnel of width 2

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Abstract

We study the motion of a robotic arm inside a rectangular tunnel of width 2. We prove that the configuration space S of all possible positions of the robot is a $CAT(0)$ cubical complex. Before this work, very few families of robots were known to have $CAT(0)$ configuration spaces. This property allows us to move the arm optimally from one position to another.

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