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"Robot arms and Moebius transformation" (the snake charmer algorithm) (joint work with Eugenio Rodriguez)

Abstract: Consider a polygonal robot arm in R^d, starting from the origin and made of m segments of length 1. We would like to move this arm so that its end follows a prescribed curve in R^d. The *Snake charmer algorithm* presented here performs this task via the diagonal action of the Moebius group $M(d-1)$ on each segment. Computer animations will be shown. The notion of genarized connection in the sense of Ehresmann plays a central role and the holonomy arising from following closed curves is quite interesting.