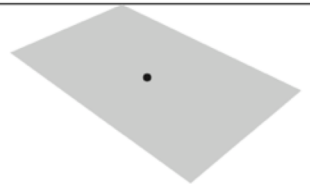
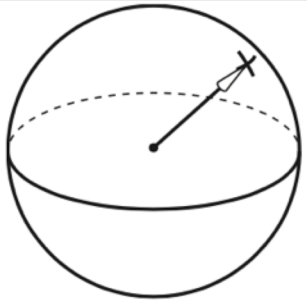
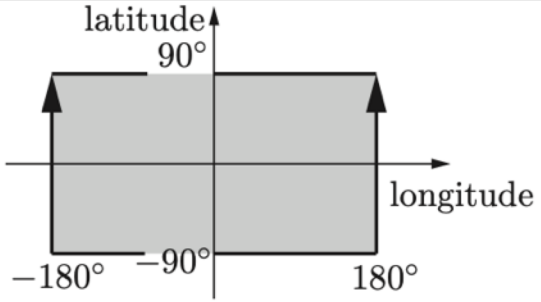
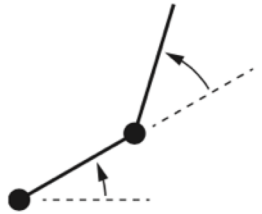
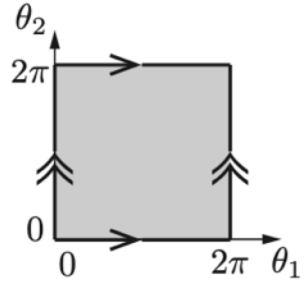
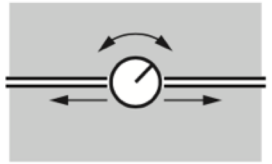
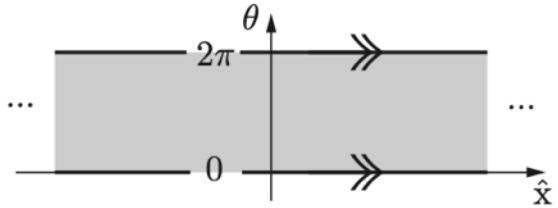
Important concepts, symbols, and equations

- Two C-spaces may have the same dof but differ in other ways. The **topology** ("shape") of a space is independent of how we **represent** it.

system	topology	sample representation
 point on a plane	 $\mathbb{E}^2$	 $\mathbb{R}^2$
 spherical pendulum	 S^2	 $[-180°, 180°) \times [-90°, 90°]$
 2R robot arm	 $T^2 = S^1 \times S^1$	 $[0, 2\pi) \times [0, 2\pi)$
 rotating sliding knob	 $\mathbb{E}^1 \times S^1$	 $\mathbb{R}^1 \times [0, 2\pi)$

Any value in an atlas of coordinate charts?
An implicit representation?

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An implicit representation?

hexrotor with two 5-DOF arms

https://www.prodrone.com/archives/1420/

C-space topology, with and without arm joint limits, rotor angles?
Implicit/explicit representations?
Grübler's formula?

KUKA youBot
mecanum-wheel omnidirectional base
moving on flat ground
plus 5-DOF robot arm + gripper

C-space topology and representation?
Include gripper, wheel angles?