

Homework # 2

Due: February 7, 2007

1. Find the Jacobians (forward and inverse mapping from \dot{p} to ω , where p is a representations of $SO(3)$) for all the representations in HW #1, problem #1.
2. Find the singular orientations for all of the representations above (i.e., orientations at which the Jacobian loses rank or becomes undefined). What happens to the rigid body kinematics (for a given R , solve for the representation) when the representation is at a singularity? Give a physical and geometric interpretation to these singularities.