Exercise 12. 3. 2015

1. Study the geodesic flow on a Lie group G with respect to a bi-invariant metric. Show that $G \times G$ is a symmetry group, compute the momentum mapping and explain the details of symmetry reduction. Use the reduced system to obtain as much information on the geodesic flow as you can. Consider in particular the case $G = SO(3)$ of a free rigid body and give an interpretation of your results.