MECH 541 Kinematic Synthesis
Mini-project 3: The Design of a Door Mechanism for a Sports Car
Statement of Work

Assigned: Monday March 17th, 2014 Due: Monday April 14th, 2014 at 5:00 p.m.
Revised: Monday March 31, 2014

Ultimate Design Inc. is developing a mechanism to open and close the doors of a sports car for a manufacturer of fancy cars. As per the design specs, the door shouldn't have visible hinges, to give the impression that it flies upon opening and closing it.

To comply with the desires of the client, the engineers and industrial designers at *Ultimate Design Inc.* have zeroed-in on a spherical four-bar linkage, whose coupler link will be the door.

Produce a preliminary design that will carry the door from the "closed" attitude $P_0Q_0R_0$ to its "open" counterpart $P_mQ_mR_m$, as indicated in Fig. 1. To this end, define $m-1$ intermediate poses that will allow you to produce the desired linkage.

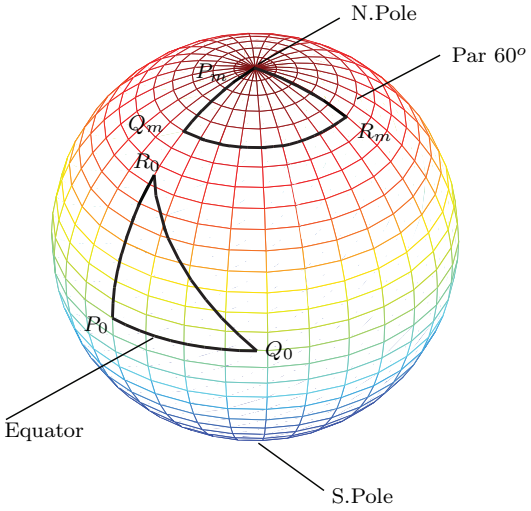

Figure 1: The "closed" and "open" attitudes of a sports-car door

A minimum value of $m = 3$ is mandatory, $m = 4$ highly desirable. Approximate synthesis, with $m > 4$, is encouraged, as it will lead to bonus points.

The report should include CAD models of the linkage and the door. Animations are not required, but strongly encouraged, to obtain bonus points.