

Geometry and Kinematics of a Convertible’s Rear Side Window

ANTON GFRERRER

Institute of Geometry
gfrerrer@tugraz.at

The side windows of cars with retractable roofs (convertibles) have to be retractable themselves. This can be an issue for the rear side windows as the space between the door and the wheel arches is cramped. A simple motion (translation, rotation, screw motion) will most probably be inappropriate as the window pane S will have to assume a couple of prescribed positions. Additionally S has to move through the sealing slit along the daylight line d . These are two nasty constraints for the desired motion.

A solution to this motion interpolation problem will be presented. The input consists of the window surface S and a couple of prescribed positions S_0, \dots, S_n of S . In a first step a suitable motion μ is being constructed and – as a by-product – a new surface S_d emerges which is pretty close to S and perfectly moves through the given sealing slit d . Additionally, we provide a set of blending surfaces S_β which are even closer to S but still more appropriate in terms of a smooth motion through d .

References

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