Smoothness Analysis of Sliding Door Based on Rotation Angle when Opening and Closing㊀

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Abstract: Combining the movement characteristics of sliding door, the geometric model of sliding door motion is established, and the geometric model is decomposed to the XZ and YZ plane. Then, the formula is established to quantitatively analyze the change of rotation angle in the two planes when the sliding door opening and closing, and the main influencing factors of the rotation angle are obtained. At the same time, the smoothness evaluation model and method based on the change of rotation angle are provided. Finally, through DMU model and production vehicle verification, the results show that the calculated values of the evaluation model are highly consistent with the verification results. This study can quickly research and optimize the smoothness of sliding door in the early stage of development, saving the development cycle.

Key words: sliding door, smoothness, rotation angle

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