

Accepted Manuscript

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PII: S0010-4485(18)30145-3

DOI: <https://doi.org/10.1016/j.cad.2018.04.002>

Reference: JCAD 2595

To appear in: *Computer-Aided Design*

Received date: 11 September 2017

Accepted date: 1 April 2018

Please cite this article as: Schleich B., Wartzack S. Novel approaches for the assembly simulation of rigid Skin Model Shapes in tolerance analysis. *Computer-Aided Design* (2018), <https://doi.org/10.1016/j.cad.2018.04.002>

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Novel Approaches for the Assembly Simulation of rigid Skin Model Shapes in Tolerance Analysis

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Abstract

While the modelling of nominal assemblies is sufficiently solved in modern computer-aided design tools, the assembly simulation for parts considering geometrical deviations is still an important research issue. Particularly in tolerance analysis, the assessment of the effects of geometrical part deviations on the part assembly behaviour is of central importance. Though established assembly simulation approaches for parts with geometrical deviations cover a moderate range of real assembly problems, they are not suitable for all assembly simulation problems. To overcome this shortcoming, a general framework and new approaches for the assembly simulation of Skin Model Shapes for the use in tolerance analysis are presented. The application of these assembly simulation approaches is highlighted in generalised case studies and recommendations for their use in tolerance simulations are derived. *Keywords:* Point-based Models; Registration; Assembly Simulation; Skin Model Shapes; Tolerance Analysis.

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