

Accepted Manuscript

Certified space curve fitting and trajectory planning for CNC machining with cubic B-splines

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PII: S0010-4485(18)30464-0
DOI: <https://doi.org/10.1016/j.cad.2018.08.001>
Reference: JCAD 2635

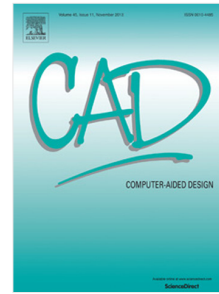
To appear in: *Computer-Aided Design*

Received date: 4 December 2017

Accepted date: 3 August 2018

Please cite this article as: Lin F., Shen L.-Y., Yuan C.-M., Mi Z. Certified space curve fitting and trajectory planning for CNC machining with cubic B-splines. *Computer-Aided Design* (2018), <https://doi.org/10.1016/j.cad.2018.08.001>

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Highlights:

An explicit expression of Hausdorff distance between a spatial line segment and a curve segment is provided if the distance does not involve self-bisectors.

An efficient space curve fitting algorithm with confined error for space G01 polylines is given.

A two-to-one trajectory planning model is proposed to find the tool-path with optimal velocities as well as the confined error.

An effective and efficient algorithm is designed to solve the two-to-one model.

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