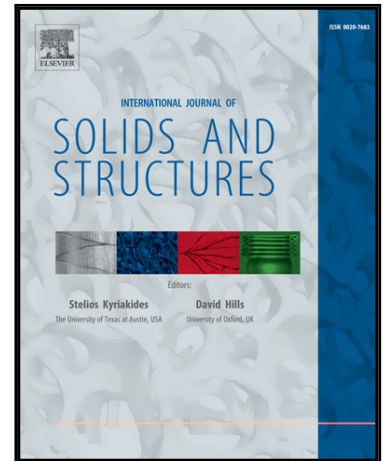


Accepted Manuscript

Mobility of symmetric block-and-hole polyhedra

Simon D. Guest, Patrick W. Fowler, Bernd Schulze

PII: S0020-7683(18)30224-5
DOI: [10.1016/j.ijsolstr.2018.05.029](https://doi.org/10.1016/j.ijsolstr.2018.05.029)
Reference: SAS 10009



To appear in: *International Journal of Solids and Structures*

Received date: 30 October 2017
Revised date: 23 May 2018
Accepted date: 31 May 2018

Please cite this article as: Simon D. Guest, Patrick W. Fowler, Bernd Schulze, Mobility of symmetric block-and-hole polyhedra, *International Journal of Solids and Structures* (2018), doi: [10.1016/j.ijsolstr.2018.05.029](https://doi.org/10.1016/j.ijsolstr.2018.05.029)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Mobility of symmetric block-and-hole polyhedra

Simon D. Guest

*Department of Engineering
University of Cambridge
Trumpington Street, Cambridge CB2 1PZ, UK
sdg@eng.cam.ac.uk*

Patrick W. Fowler

*Department of Chemistry
University of Sheffield
Sheffield S3 7HF, UK
P.W.Fowler@sheffield.ac.uk*

Bernd Schulze*¹

*Department of Mathematics and Statistics
Lancaster University
Lancaster LA1 4YF, UK
b.schulze@lancaster.ac.uk*

Abstract

Block-and-hole polyhedra can be derived from a bar-joint triangulation of a polyhedron by a stepwise construction: select a set of non-overlapping disks defined by edge-cycles of the triangulation of length at least 4; then modify the interior of each disk by an addition or deletion operation on vertices and edges so that it becomes either a rigid block or a hole. The construction has a body-hinge analogue. Models of many classical objects such as the Sarrus linkage can be modelled by block-and-hole polyhedra. Symmetry extensions of counting rules for *mobility* (the balance of mechanisms and states of self-stress) are obtained for the bar-joint and body-hinge models. The extended

¹Supported by EPSRC First Grant EP/M013642/1

Download English Version:

<https://daneshyari.com/en/article/8947098>

Download Persian Version:

<https://daneshyari.com/article/8947098>

[Daneshyari.com](https://daneshyari.com)