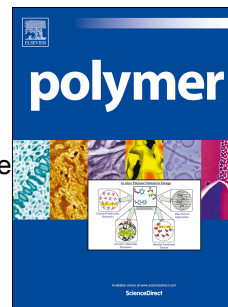


Accepted Manuscript

Insights into the mechanical properties of several triply periodic minimal surface lattice structures made by polymer additive manufacturing

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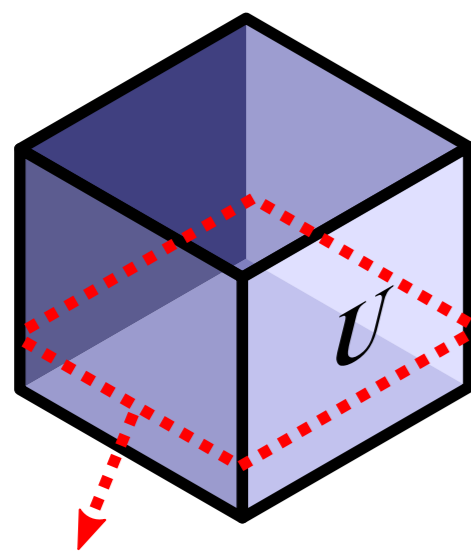
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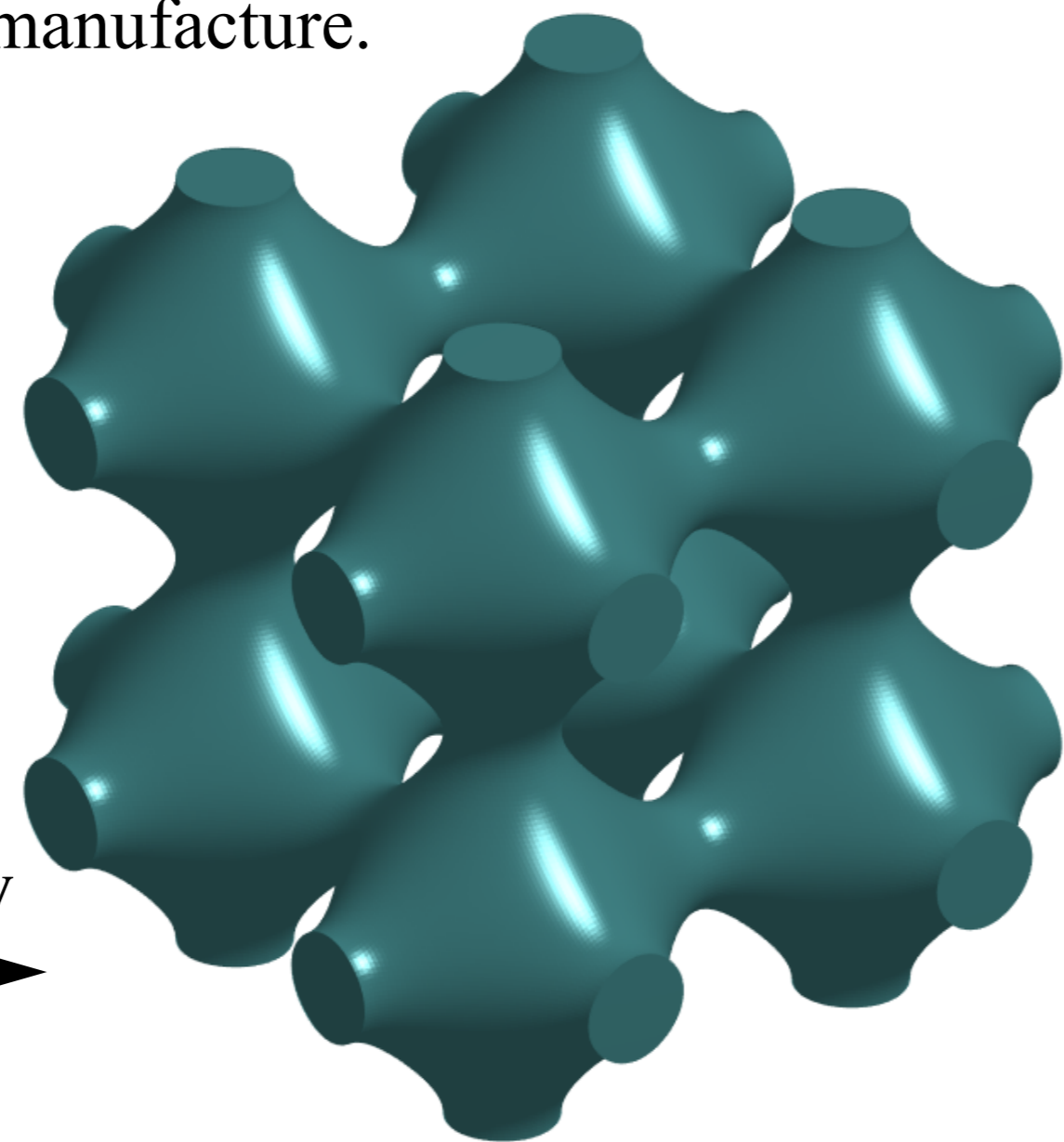
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Boundary representation (e.g. STL file) for manufacture.

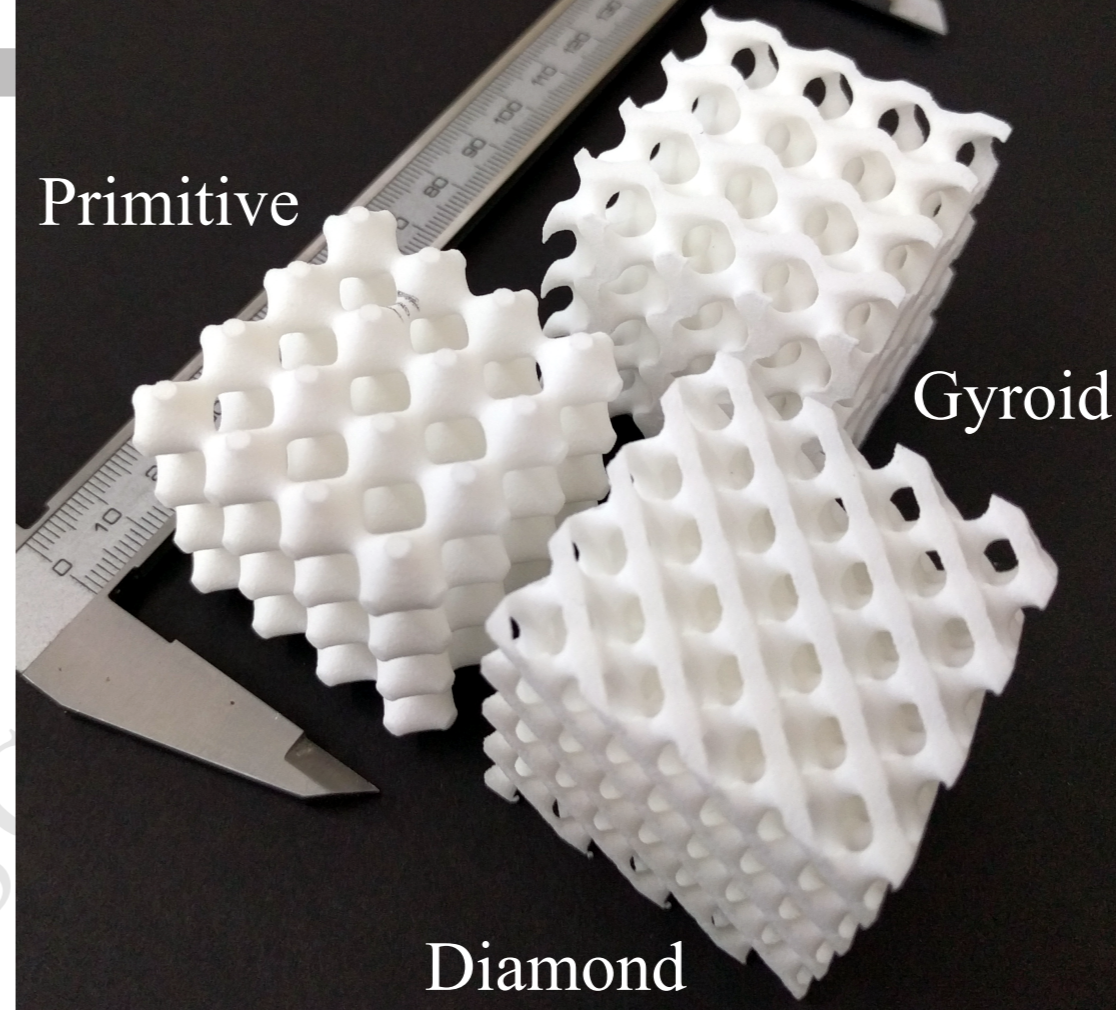
Generate 3D U field based on TPMS equations



Apply surface triangulation at $U = 0$ boundary

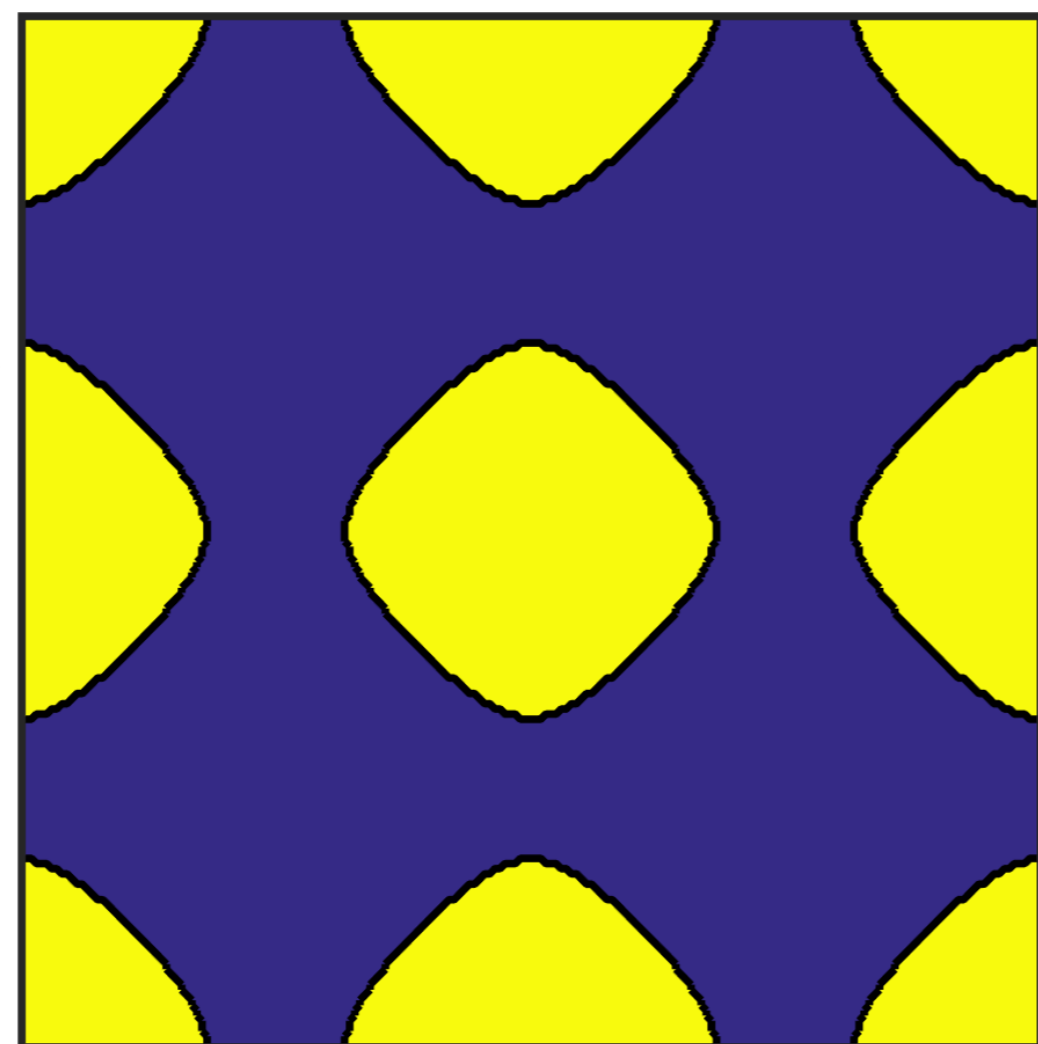


3D printing

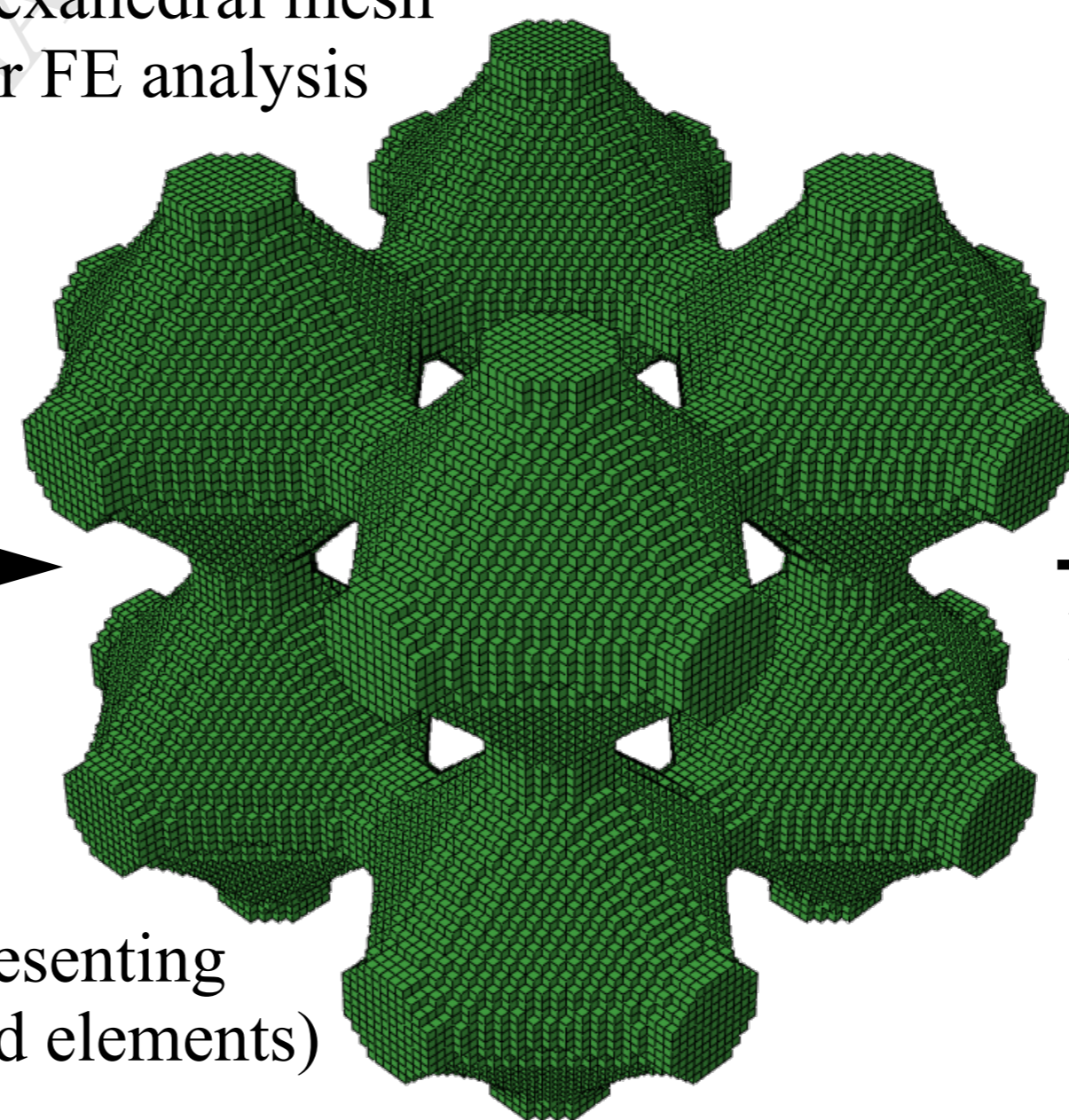


A general method to design TPMS lattice structures for fabrication, mechanical testing and finite-element analysis.

Find $U = 0$ isosurface

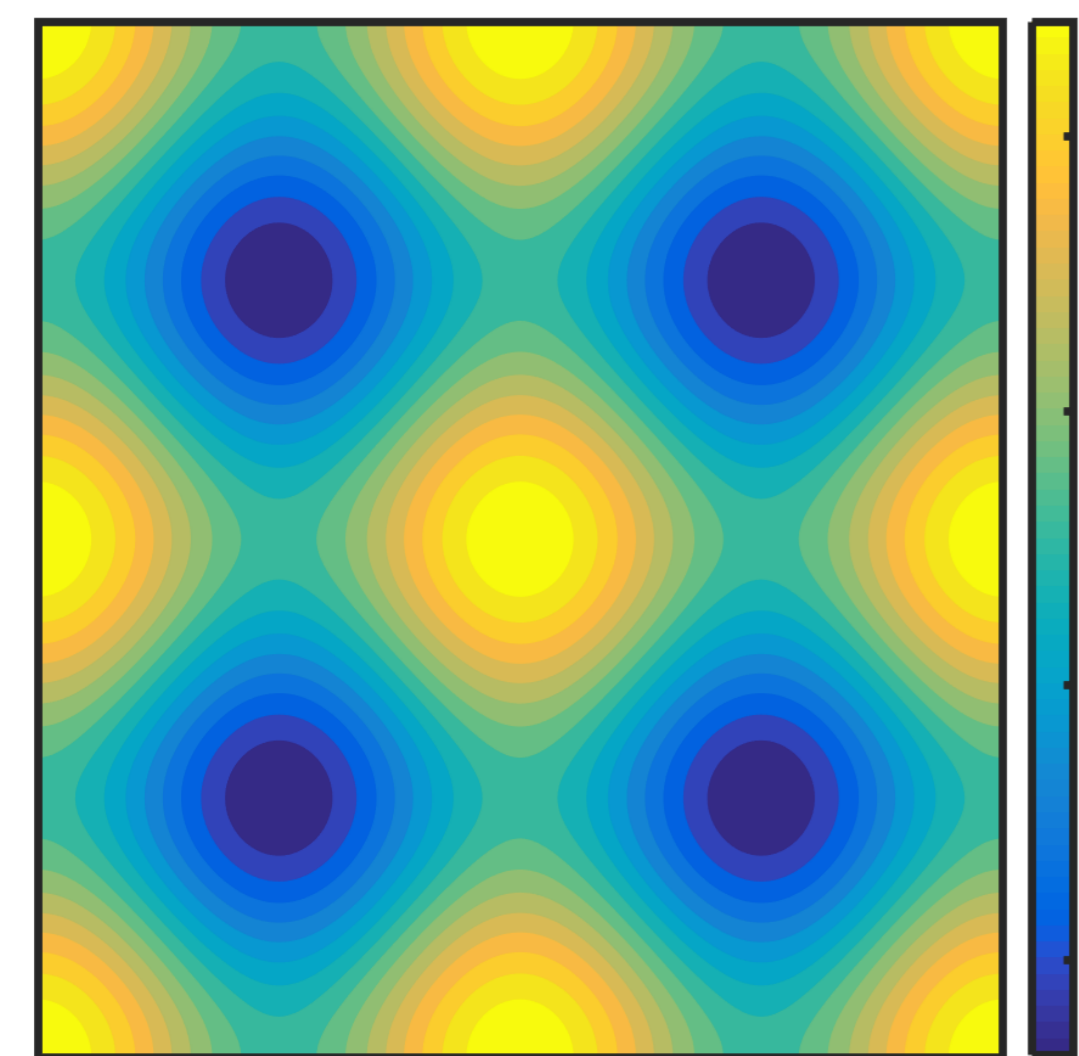
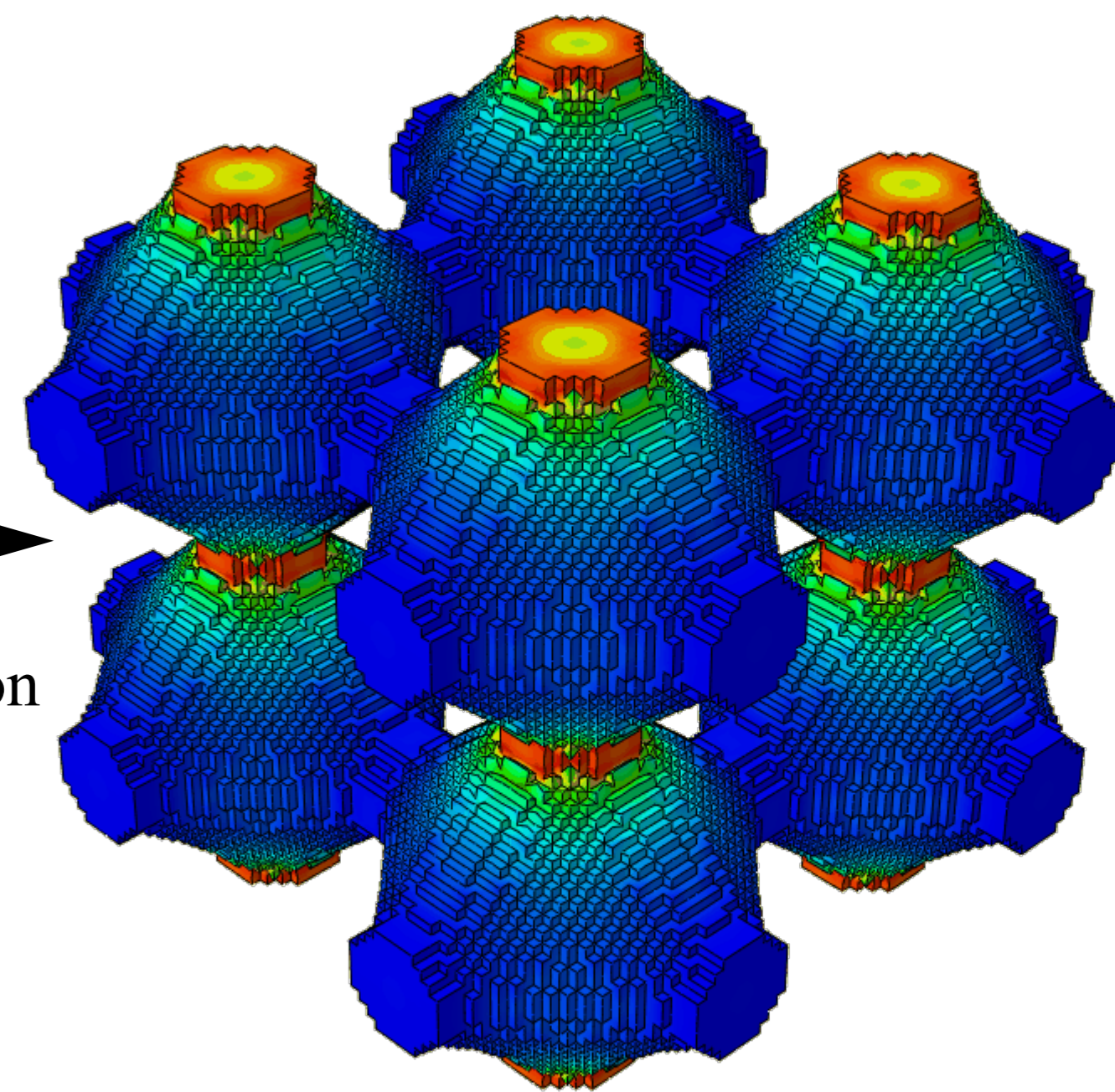


Convert to binary array.



(1 and 0 representing solid and void elements)

FE stress distribution



(example 2D slice of U field)

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