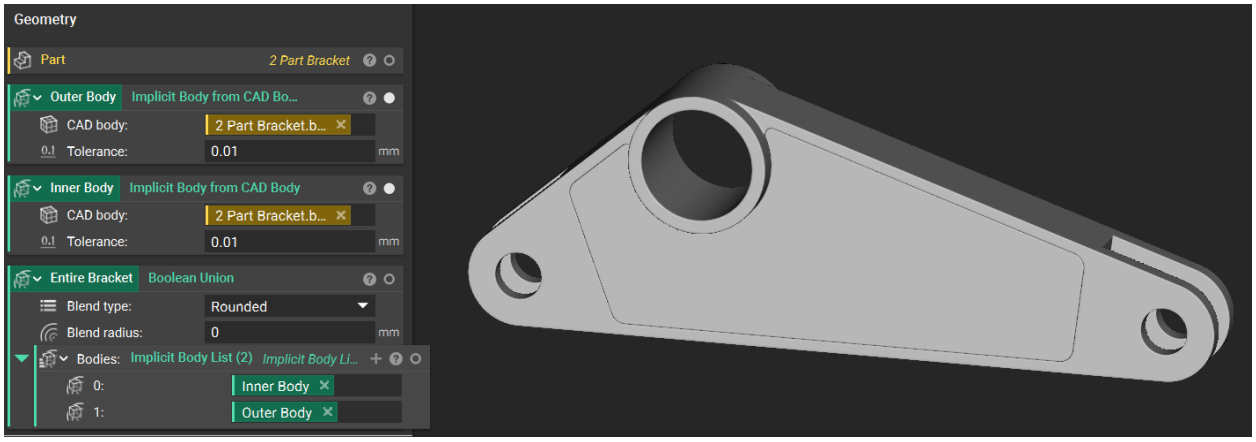
Follow Along: Periodic Lattices

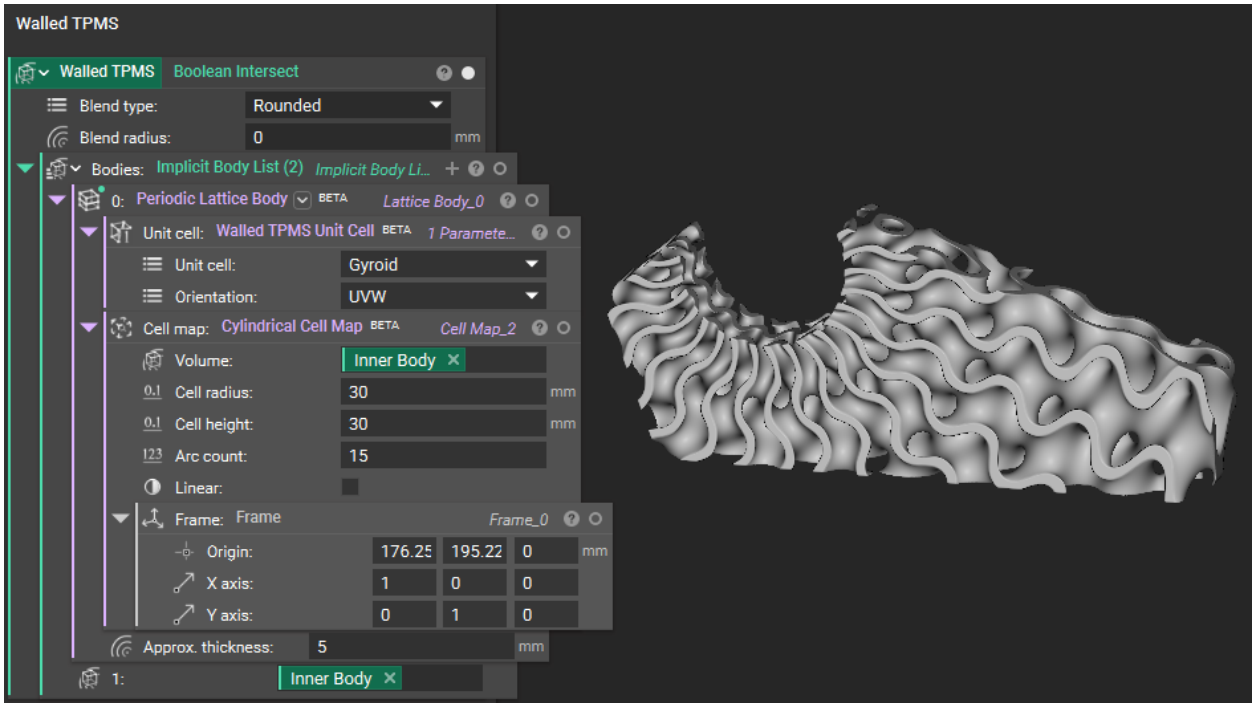
In this lesson, we will walk through adding a TPMS Structure and a Graph Lattice to the inner body of a CAD Body bracket. To review importing and selecting CAD bodies, please revisit our Core Course.

Please download the nTop file below to follow along with the tutorial.

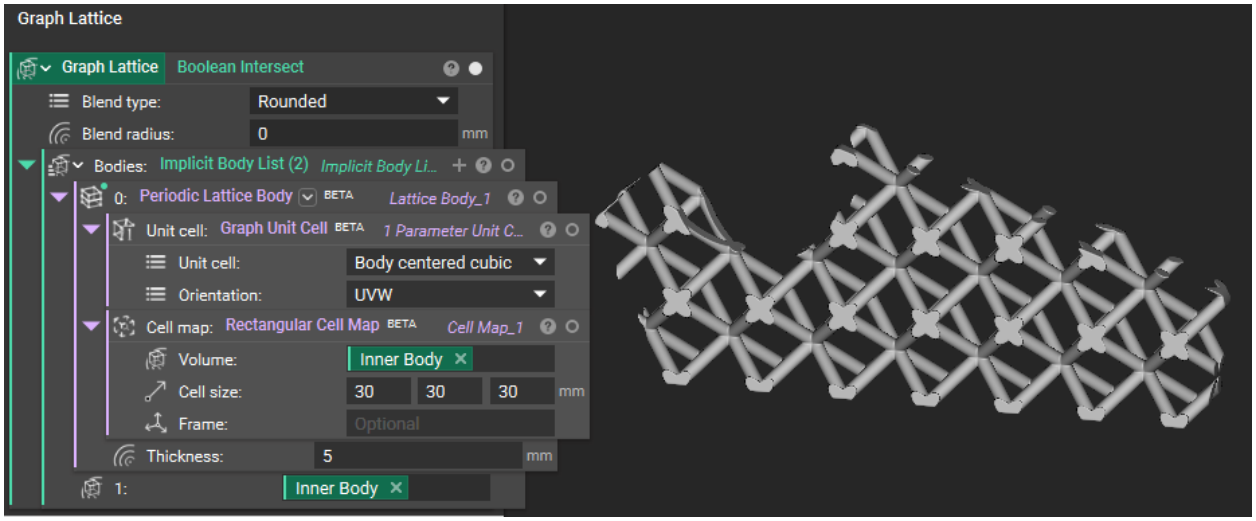
Step 1: The starter file has an embedded two-part CAD bracket in the *Geometry* section. Use two **Implicit Body from CAD Body** blocks to convert to implicit bodies, and make these into variables, *Inner Body* and *Outer Body*. Add a **Boolean Union** block, and merge the two implicit bodies to create a third variable, *Entire Bracket*.



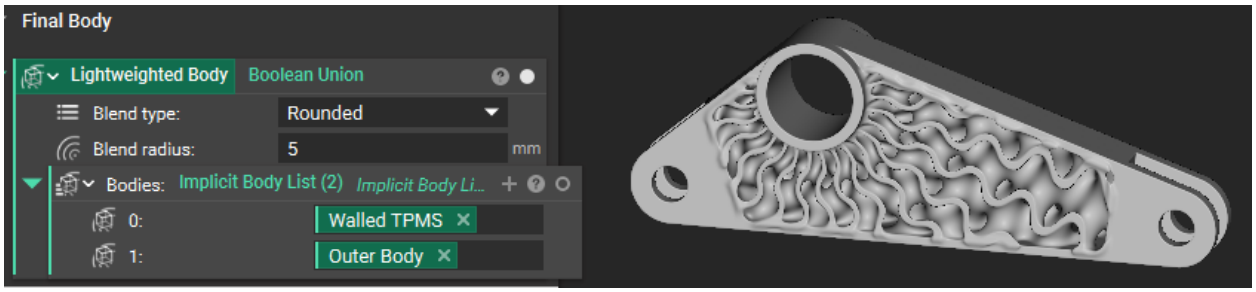
Step 2: In the next section of our notebook, we will add a **Periodic Lattice** block with a **Walled TPMS Unit Cell** and **Cylindrical Cell Map** with a defined **Frame**. Set inputs as seen below. Then, add a **Boolean Intersect** block to trim the lattice to the *Inner Body* volume. Make this a variable called *Walled TPMS*.



Step 3: In the next section, follow a similar process, this time using a **Graph Unit Cell** and a **Rectangular Cell Map**. Trim with a **Boolean Intersect**, and make this into a variable called *Graph Lattice*.



Step 4: Use a **Boolean Union** block to merge either of the periodic lattices with the *Outer Body*, and add a blend radius to increase strength of the connections between the lattice and frame. This may cause some material to extend beyond the initial design space.



Step 5: To trim the lightweight part back down to its initial design region, add a **Boolean Intersect** block, and intersect the body with the initial *Entire Bracket*.