Overview and Motivation

The Plant Cell Periclinal Cortical Microtubule Array (PCMA) DGG

- The PCMA DGG builds on the CMA DGG, and uses DGGML, which is more flexible and efficient.

- We test the effect boundary conditions and boundary shape may have on alignment.

- Key results:

  1. The array orientations of square of the square domains indicate multi-modal behavior.

  2. Arrays in rectangular domains reorient with a change of boundary conditions.

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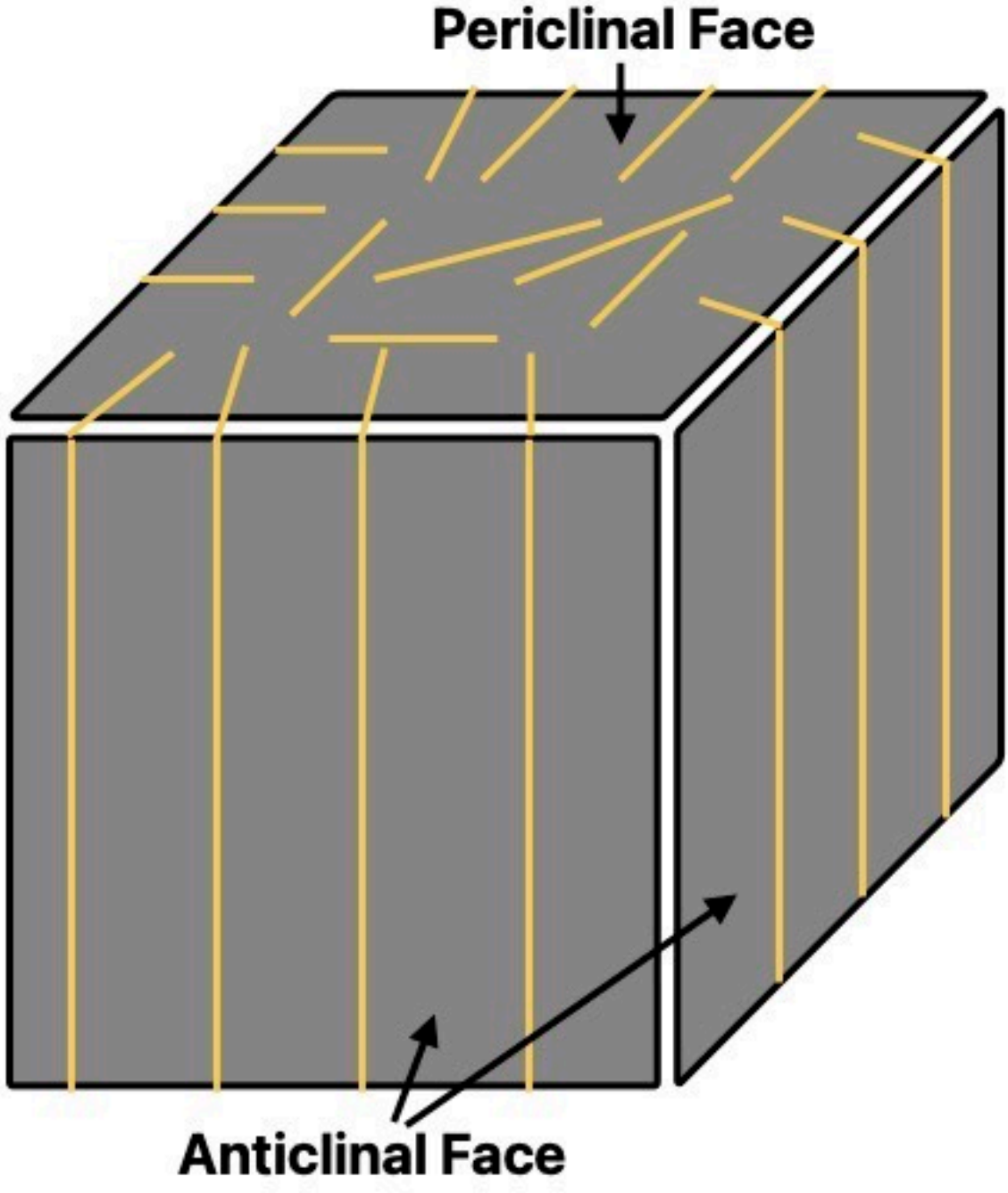
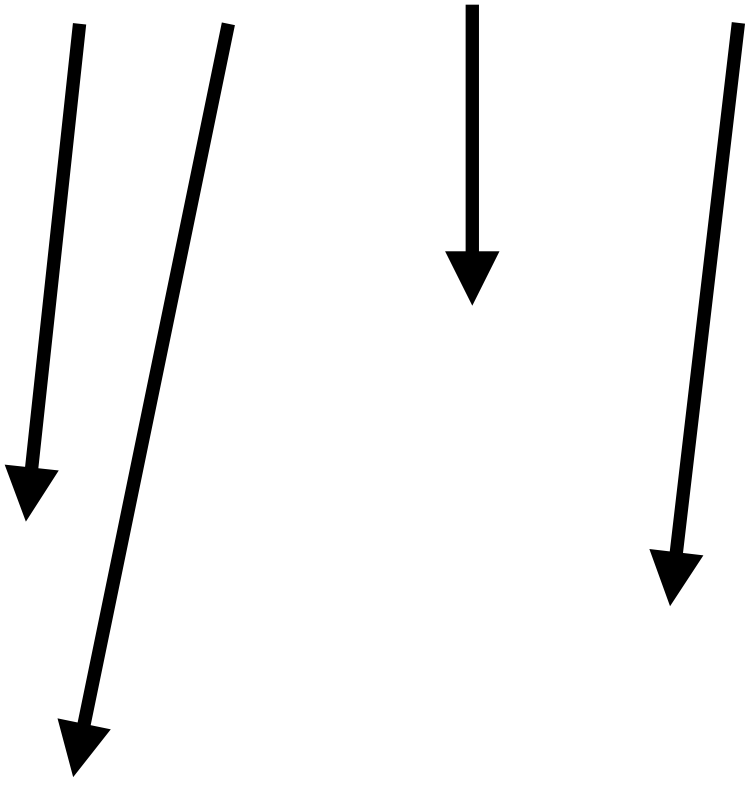

Periclinal Face
Anticlinal Face

Figure 39: Visualization of our approximation of the cell as a polyhedral prism, where we restrict our simulations to the periclinal face and have a “picket fence” idealization[1].

CLASP uniformly localized on the edges.



1. (Shaw, 2013)

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1. Square (

2. Rectangular (

- The PCMA experiments with two face shapes:

hours of biological time:

- Within each category 6 scenarios are run, 16 repetitions, 92 experiments for 2

(4) through (6), CLASP on the boundary with high rate of zippering.

(2) CLASP on the boundary with high rate of crossover.

(1) Collision Induced Catastrophe Boundary with high rate of zippering.

(3) Influx of Microtubules from the anticlinal face with high rate of zippering.

$$5\mu m \times 5\mu m = 25\mu m^2$$

$$8.33\mu m \times 3\mu m = 25\mu m^2$$

approximation of the cell as a polyhedral

fence” idealization[1].

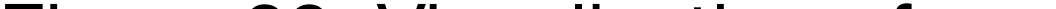
Figure 39: Visualization of our

prism, where we restrict our simulations

to the periclinal face and have a “picket

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