Supercomputing Challenge Proposal

**Team ID**: HS40

**School Name**: STEM Excellence Academy

**Area of Science**: Environmental & Civil Engineering

**Project Title**: Wind effects on a tensile structure with a horizontal membrane

**Background**: Over the past ten years my family has lost many tensile structure with horizontal membranes (AKA our family trampoline) due to high winds picking up the trampoline and transporting it to the neighbor’s yard. There seemed to be more conditions at play given any normal windy night and the possibilities if we would have a trampoline in the morning. We have determined the direction and magnitude of the wind relative to the trampoline, our house and our fence seemed to be the most relevant. Although at one point our family had two different types of trampolines and one evening we lost one trampoline while not the other. So, location within the yard seemed relevant also.

**Our question is**: What is the magnitude and direction of wind necessary for a tensile structure with a horizontal membrane to go airborne in our backyard?

**Factors of consideration:** Mass of the tensile structure with a horizontal membrane, sail properties of the mesh safety netting, location of the house, location of the neighbor’s houses, location of the 6-foot plank fence.

**Team members:**

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