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# Spiderwebs in the physics classroom **FREE**

Maura Shapiro



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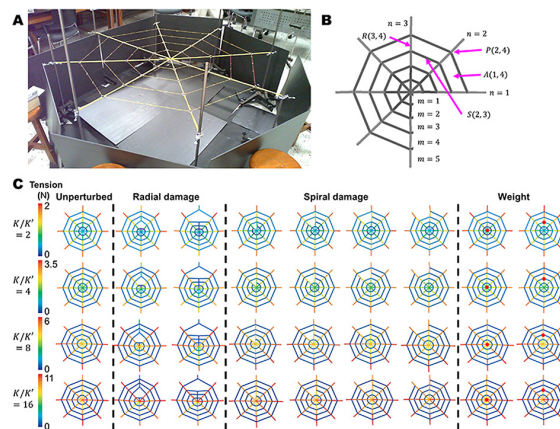


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Students make rubber band spiderweb replicas to probe mechanical properties.



Sticky, spiraled, and sometimes spooky, spiderwebs are efficient prey-catching contraptions. Lee and Choi demonstrated they are also a handy model for teaching interdisciplinary physics and biology concepts. Using a rubber band replica, middle school students explored how the properties of each string impact the web.

“The middle school students designed the web from the beginning,” said author Kyung Suk Lee. “They calculated how long each segment should be to make an octagonal web and were excited to play with their model web. Adding a weight to mimic prey or removing a segment to mimic danger, they could ‘look and feel’ how the web changes according to the perturbation which they induced for themselves.”

Empowered to explore for themselves, the students learned that the threads radiating out from the center of the web function mostly as structure, while the spiral threads used to catch prey can sustain damage without destroying the web.

“I thought this was a great opportunity for science education,” Lee said. “You don’t always have to visit the top-notch laboratories to do good science.”

The team will expand upon their web research to study how a spider would identify where its prey was captured. Their design involves a vibrating mass that imitates prey on a thread and vibration monitors in other locations around the web.

“We hope this work can draw biologists and physicists interested in education,” Lee said. “There has been a lot of interdisciplinary collaboration in science that has proven fruitful, so we hope to see more collaborative works in science education, too.”

**Source:** “Probing mechanical properties of a spider web using a simple rubber string model,” by Kyung Suk Lee and Hyo Seok Choi, *The Physics Teacher* (2024). The article can be accessed at <https://doi.org/10.1119/5.0140735>.

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