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Vibration Propagation in Spider Webs[1] ROSS HATTON, ANDREW OTTO, Oregon State Univ, DAMIAN ELIAS, Univ. California, Berkeley — Due to their poor eyesight, spiders rely on web vibrations for situational awareness. Web-borne vibrations are used to determine the location of prey, predators, and potential mates. The influence of web geometry and composition on web vibrations is important for understanding spiders behavior and ecology. Past studies on web vibrations have experimentally measured the frequency response of web geometries by removing threads from existing webs. The full influence of web structure and tension distribution on vibration transmission; however, has not been addressed in prior work. We have constructed physical artificial webs and computer models to better understand the effect of web structure on vibration transmission. These models provide insight into the propagation of vibrations through the webs, the frequency response of the bare web, and the influence of the spider's mass and stiffness on the vibration transmission patterns.

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