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**Jumping of water striders on water** EUNJIN YANG, JAEHAK SON, PIOTR JABLONSKI, HO-YOUNG KIM, Seoul National University — Small insects such as water striders, springtails, fishing spiders freely move on water by adopting various modes of locomotion, such as rowing, galloping, jumping and meniscus-climbing. As the physics of jumping have not yet been fully understood among those ways of semi-aquatic propulsion, here we present the results of a combined experimental and theoretical investigation of the dynamics of water striders leaping off water. We first image and analyze the trajectories of the legs and body of jumping water striders of three different species with a high-speed camera. We then theoretically compute the forces acting on the body by considering the capillary interaction between the flexible legs and deforming water meniscus. Our theory enables us to predict the maximum take-off speed for given leg lengths. The experimental measurements suggest that the water striders drive their legs near the optimal speed to gain the maximum take-off speed.

Ho-Young Kim  
Seoul National University

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