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Laura Ann Miller* (1am9@unc.edu), CB 3250 Phillips Hall, Department of Mathematics, Chapel Hill, NC 27599. *Rolling up with the flow to reduce drag and flutter: A study of broad leaves.*

Flexible plants, fungi, and sessile animals reconfigure in wind and water to reduce the drag forces acting upon them. In strong winds and floodwaters, leaves roll up into cone shapes that reduce drag compared to rigid objects of similar surface area. Less understood is how a leaf attached to a flexible petiole (leafstalk) will roll-up stably in an unsteady flow. A combination of experiments and numerical simulations is used to describe the unsteady forces acting upon flexible sheets attached to flexible beams. The results from the simplified physical and mathematical models are then compared to measurements taken from broad leaves. (Received August 23, 2012)