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Enhanced flight characteristics by heterogeneous autorotating wings LIONEL VINCENT, MIN ZHENG, EVA KANSO, University of Southern California — We investigate experimentally the effect of mass distribution and flexibility on the descent motion of thin rectangular auto-rotating wings. We vary the wing thickness and material density under carefully controlled initial conditions. We focus in particular on the flight characteristics and how it affects the dispersion properties, namely, the flight duration, descent angle, and flight range. We found that altering the mass distribution along the auto-rotation axis generally leads to a diminution of aerodynamic characteristics, in agreement with previous studies. On the other hand, changing the mass distribution width-wise can lead to enhanced flight characteristics, from beneficial aerodynamic effects.

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