

Abstract Submitted
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The flight of *Ruellia ciliatiflora* seeds DWIGHT WHITAKER, ERIC COOPER, MOLLY MOSHER, YIJUN WANG, CHAELEE DALTON, Pomona College — The fruits of *Ruellia ciliatiflora* open explosively and launch mm-sized disks at speeds exceeding 10 m/s a distance of 5 m. Observations with high-speed video reveal that the seeds are launched in a streamline orientation that is maintained with a backspin of 1.5 kHz. Through a careful analysis of the high-speed videos of the seeds' flight we measure the aerodynamic forces on these spinning seeds. We find that the exceptional rotation rate both reduces drag on the seed by keeping its cross section as small as possible and generates a modest ($\sim 0.3g$) lift on the flying seeds. To understand the aerodynamic forces we create photometrically scanned, 3D printed models of the seeds for particle image velocimetry (PIV) in a flume of tow tank. We will discuss our method for producing accurately shaped model seeds as well as preliminary PIV data on the flow of fluid around the flying seed. This work marks the start of a longer-term project that will compare the dynamics of seed launch and flight within the Acanthaceae family, which has over 2000 species in habitats ranging from rainforest to savannah that all use a similar method for launching seeds.

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