Feather Motor-Glider Overall Properties All-up weight = 61.9 g (2.18 oz)Peter Sharpe L/D (ideal piloting) = 12.4 (design heavily inspired by Drela Apogee) Cruise Airspeed = 3.53 m/s Cruise AoA = 5.08 deg Wing Cruise CL = 0.58 $S = 0.137 \text{ m}^2 (212 \text{ in}^2)$ Sink Rate = 0.286 m/s 0.196 Cma (w/visc.aero) = -0.46Cnb (w/visc.aero) = 0.0435 Wing Reynolds Number = 36k AVL: Cma = -0.53AVL: Cnb = 0.0480XFLR5: Cm (w/ visc. aero) = 0 (trimmed) AVL: Clb Cnr / Clr Cnb = 2.24 AG13 (5.8%) airfoil 500 throughout Foam-3D-printed joiner + mount Flat-plate 0.073 **Avionics** airfoil Carbon-fiber tube 5"x3" for boom (nose to tail) 982 folding prop ⊙ Foam-3D-printed V-tail mount Foam-3D+printed 36° 6000 kv avionics\ mount motor Mass Breakdown wing = 22.73 g (0.80 oz)tail surfaces = 4.26 g (0.15 oz)Cast out of rigid linkages = 1.00 g (0.04 oz)expanding foam, motor = 4.49 g (0.16 oz)2 lb/ft^3 motor bolts = 0.30 g (0.01 oz)propeller = 1.54 g (0.05 oz)3 mm OD carbon propeller band = 0.06 g (0.00 oz)tube spar buried avionics board = 4.30 g (0.15 oz)into wing (cast in) 11° battery = 4.61 g (0.16 oz)pod = 7.00 q (0.25 oz)60 grams-force boom = 7.00 g (0.25 oz)0.110 static thrust adapters + glue = 4.58 g (0.16 oz)0.025 Control Scheme 0.085 Neutral Point No control surfaces on wing (tail-only 095 091 control). Tail surfaces are torsionsprung using 9 thou 0 music wire, Z-bent and CA-glued in. 0.150Spectra line linkages connect printed-in control horns up to 2x 0.032 Simple Foam-printed 6000kv Avionics board linear servos on bevel' $\rho = 0.40 \text{ g/cm}^3$ motor (RX, 2x servos, avionics board. ESC, IMU + FC)Printed-in Guide for Flight Dynamics living hinge linkages - Phugoid $\zeta = 0.23$ Printed-in - Dutch roll 1S 150 mAh LiPo Printed control horn, - f = 0.76 HzDetail A avionics (inside of V) $-\zeta = 0.38$ mount Detail B Spiral $\tau = 1.38 s$ Printed mount

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