Recommended “Homework” for Rocketry Lesson 5 11/16/2021

Reading

* read Chapters 13, 14, 15 in the High-Power Rocketry book

Materials

* purchase spray paint and primer if you are going to paint your rocket (which we encourage you to do – but no spray painting indoors, at least not without permission)

Exercises

* finish your OpenRocket model and check it (total weight and balance point without a motor) against your completed rocket; ballast the model if need be, to make it realistic – then add a motor and simulate a flight to predict performance (especially, figure out the appropriate delay-grain timing for your motor eject for grinding purposes)
* finalize a time slot for your team to do your final check-out (one-on-one by Zoom (or in person, if you are willing to come to the U of MN) with Prof. Flaten and/or with Sophia) – the rocket needs to be completed (except perhaps for painting) and your Flight Readiness Review needs to submitted at least 24 hours before this event – choose a date between Wednesday, Nov. 17 and Wednesday, Dec. 1 (Note – avoid the Thanksgiving holiday which runs from Nov. 25 through Nov. 28, 2021 at most schools)
* finish and submit Flight Readiness Review before your final check-out

Building

* make a sled which can slide on and off the threaded rods then finish av-bay build and wiring and programming (and testing with LEDs – optional) – seal the holes where the wires from the altimeter puncture through the bulkplates on both ends of the av-bay (on their way to terminal blocks that you mount on the outside of the ends of the av-bay)
* do final tweaks – bleed hole, vent holes (possibly in more than one place), add loops and quick-links to attach parachutes and flame protectors at appropriate places in the lower and upper recovery harnesses (hint: place loops so that you don’t let rocket parts hit each other as they hang down from the parachute(s))
* do calculations for the upper rail button then install it near the rocket CG (preferred) or on the collar of the av-bay (allowed) using epoxy to hold the flange in place inside the airframe with the barrel sticking out of the airframe – the button should be able to roll (perhaps use Loctite on the threads)
* do calculations for delay charge timing and expected ejection charge size

Link to document repository

http://www.aem.umn.edu/people/faculty/flaten/Rocketry\_Remote\_Lessons\_Fall\_2021/

Sophia’s evolving photo-build instructions – check back regularly:

<https://docs.google.com/presentation/d/1NritqFEBkQI95c4ex6SjiA-08uaoEcFUydgjlA6mtdY/edit#slide=id.p>