

Herbert Franz Mehnert Stadeler  
2800 Hackney Way  
Jamestown, North Carolina 27282  
hmehnert@mit.edu, hfmehnert@gmail.com

**Massachusetts Institute of Technology**, 77 Massachusetts Ave., Cambridge, MA 02139  
Course XVI, Aeronautics and Astronautics Engineering class of 2015  
**Last Recorded GPA: 4.3**

**Professional Experience:**

**-JPL Advanced Deployable Structures Group(ADSG) Intern. Summer 2012(10weeks) paid.**

Aerospace Engineering intern working with ADSG Starshades project. The goal of the Starshades project is to develop technology for the use in deployable external space telescope occultors. Occulting techniques are used in the discovery and research of exoplanets where very high contrast is desired between the parent star and observing target. During this phase of the project, I worked with 3 other engineers and several mentors to construct 4 Starshade "petals", optical components of approximately 12 feet in length used to produce destructive interference patterns and controlled scattering in starlight. I also worked in the design and prototyping of a scaled down model of the Starshade for use in demonstrations.

**-MIT Space Systems Laboratory(SSL) Intern. RINGS project UROP, (2011-12) paid.**

Currently working on ground testing of the RINGS project. RINGS(Resonant Inductive Near-Field Generation System) is a project conducted by MIT in tandem with the University of Maryland to research the applications of EMFF(Electromagnetic Formation Flight) of satellites. The project uses electromagnets in the shape of coils around the SPHERES(Synchronized Position Hold, Engage, Reorient Satellites) platform developed at MIT to control the motion of multiple SPHERES relative to each other. I developed a new hover-carriage testbed for the SPHERES satellites, ground testing the satellites using the MIT flat floor facility, and helped conceptualize an anchoring system for the satellites aboard the JEM pressurized module on the ISS where full testing of RINGS will take place in the Spring of 2012.

**-J. Donald Cline Scholar and Optical Astronomy Intern at Pisgah Astronomical Research Institute(PARI), Summer 2011(8weeks) paid.**

Developed and setup a prime-focus imaging telescope (Celestron C14/Hyperstar) with an SBIG-ST2000 Camera which I used to image nebula and galaxies in the summer skies as well as comets for a research project on the morphology of comets. Brought online several systems including the Celestron C14, a Questar 7 inch refracting telescope with an Apogee Alta Camera, and control systems implementing smartpower and WakeOnLan(WOL) technologies for remote observing. Had my research on comet morphology analysis using photometry published in the PARI 2011 Research Proceedings. Presented at the 2012 American Astronomical Society(AAS) convention in Austin Texas on comet photometry and brightness mapping.

## **Skills**

### **IT:**

Python programming, Java Programming, Blender 3d Rendering, Sketchup 3d Rendering, Solidworks CAD, Vernier systems LoggerPro/ Graphical Analysis, SAO image and imageJ processing software, Scilab, Matlab.

### **communication:**

Native/Fluent Spanish Speaker, Practiced in German.

### **Astronomy:**

Highly experienced with telescopes (Meade, Celestron, and RCOS telescopes 100 - 400 mm apertures, MIT Small Radio Telescopes(SRTs), PARI 4.6m Radio Telescope "Smiley"), skills(photometry, spectrography, and data reduction), equipment (CCDs-SBIG ST-7,8, 2000 and STV, Spectrographs SBIG SGS, filters, optics). Conducted published research in Comet photometry and astrometry in 2011 and 2012.

### **Engineering Skills:**

Highly Experienced with Automobile Systems (engine, fuel, oil, cooling, filters, electrical, bodywork). Basic knowledge of circuitry and electronics. Advanced fabrication skills (wood, aluminum, steel, other). Experienced part designer(solidworks).

### **Notable Personal Projects:**

**1989 BMW 535i**- 5 year project. Fixed mechanical, electrical, and fuel systems as well as body work and misc. problems. The car currently has 242,000 miles on the engine and still runs very smoothly.

**Chain platform**-Constructed a swinging platform suspended by 4 chains of dimensions 4' by 8'. The platform supported upwards of 600 pounds and was my bed for the 2011-2012 MIT year.

**Tesla Coil**-Built and optimized a 15,000 Volt Neon Sign Transformer(NST) powered Tesla coil with 2 hall mates at MIT. The secondary coil was comprised of 1337 turns of 15 gauge magnet wire, the primary was 1/4 inch copper tubing, and the toload was an aluminum foil toroid 12 inches in diameter. An interesting non-parallel capacitor bank was used that increased efficiency and safety beyond any known capacitor bank designs. 3-4 foot long streamers were achieved.

**TurboJet Engine**-Planning to build a turbo jet engine in the 2012-2013 academic year with the same 2 hallmates from the Tesla coil project as well as others in a new Engineering development organization we are forming.

-more information(schematics, specifics) about projects/experience available upon request.