# JSC Senior Design Project and or Intern Request Form

## Project Title:
Space Radiation Monitoring

## Project Description:
Evaluate the ability of CMOS image sensors to be used for space radiation monitoring.

### Choose most appropriate area of research:
- □ Planetary Surface Systems
- □ Ground Operations
- □ Propulsion
- □ Spacecraft
- □ Human Health Program

### Program Applicability
- □ ISS
- □ CEV/SLS
- □ Commercial Crew
- □ Asteroid
- □ Adv. Technology (AES/STMD)

### Choose one project:
- ☒ Senior Design
- □ Internship

**Roles and Responsibilities of Senior Design POC/Mentor**

I have coordinated with my management and I am able to support at least three (3) teleconferences (kick-off, midterm, and final) with a Senior Design Project Team at a university that chooses my project. I understand that I shall not provide any sensitive or classified information to the Senior Design Project students of faculty. I will provide feedback to the project team if requested.

If an intern is selected for my project, I will provide an environment where an intern can grow and we may have a mutually beneficial and successful internship. My project will be able to provide a desk space, work area, and computer for an intern. I will review any final report or presentation that the intern generates during his/her internship and submit it to Export Control (DAA) for approval. This project opportunity will be posted in OSSI, through the office of Education (use exact same title). OSSI website: [https://intern.nasa.gov](https://intern.nasa.gov)

### Check desired Timeframe for Internship:
- ☒ Year long
- □ Summer
- ☒ Fall
- □ Spring

### Check desired Major/Minor(s) for Internship:
- ☒ Aerospace Engineering
- □ Aeronautical Engineering
- □ Astronautical Engineering
- ☒ Biomedical Engineering
- □ Chemical Engineering
- □ Civil Environmental
- □ Health Engineering
- ☒ Electrical, Electronic Engineering
- □ Computer Engineering
- ☒ Engineering Physics
- □ Industrial Manufacturing Engineering
- □ Materials, Metallurgical Engineering
- □ Mechanical Engineering
- ☒ Mechanics
- □ Nuclear Engineering
- □ Astronomy
- □ Astrophysics
- □ Chemistry
- □ Optics
- □ Physics
- □ Atmospheric Sciences
- □ Geography
- □ Geosciences
- □ Oceanography
- □ Natural Resource Management
- □ Mathematics, Applied Mathematics
- □ Computer Science
- □ Astrobiology
- □ Biology
- □ Biochemistry/Biophysics
- □ Microbiology
- □ Bacteriology
- □ Chemical Engineering

☐ Other, please specify:

<table>
<thead>
<tr>
<th>Mentor Name:</th>
<th>Doug Holland</th>
<th>Mentor's E-mail:</th>
<th><a href="mailto:s.d.holland@nasa.gov">s.d.holland@nasa.gov</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title &amp; Organization:</td>
<td>EE / EA351</td>
<td>Phone #:</td>
<td>X33638</td>
</tr>
<tr>
<td>Alternate POC/Mentor Name:</td>
<td></td>
<td>Alternate's E-mail:</td>
<td></td>
</tr>
<tr>
<td>Education Office Signature and Date:</td>
<td></td>
<td>Intern Mentor’s Signature &amp; Date:</td>
<td></td>
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</tbody>
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As supervisor/manager, I approve of the above named individual as Senior Design Project POC of Intern Mentor.

| Signature & Date: | S-31-13 |

(For Intern Request Only) As Administrative Officer, I am aware that the above named Intern Mentor has submitted a request for an Intern.

| Signature & Date: | |
PROJECT DESCRIPTION:

The RISA multispectral imager has been shown to be able to detect and measure space radiation. Further study is required to determine the usefulness and potential of employing the RISA imager as a space radiation monitoring device. The ability to have a single instrument provide multiple functions is of interest to NASA given limit stowage and power available in the spacecraft environment. This project would include exposing the RISA imager to radiation sources of various types of particles and then analyzing the resulting data to characterize and validate the types of particles being detected. A qualifying university would need to have access to radiation sources and methods to create secondary particles of interest. In addition, temperature monitoring, and other environmental characteristics shall be included in the RISA design to serve to both indicate the ambient environment and for sensor calibration.

DESIGN TEAM PROFILE:
- **Level:** Upper Division students
- **Major:** Physics, Nuclear Physics, Biomedical Engineering, Electrical Engineering, Mechanical Engineering
- **Teams:** Mentor may accept more than one team