DEPARTMENT OF INTERNATIONAL PARTNERSHIPS AND STUDENT MOBILITY

Research Project Internship Form

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Faculty Supervisor Name: Mainak Basu, Ph.D.(Tech.), M.Sc.(Instrumentation)

Faculty Co-Supervisor Name: *(if any)*

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Department / School: Dept. of Physics / School of Engineering and Sciences

Internship Project Name: Theoretical evaluation of MagnetoHydroDynamic (MHD) solar ejecta deflection mechanism

Duration of Internship: 3-6 Months

Number of Students Needed: 01

Location of Internship (Lab/Company/Office): Laboratory / Theoretical

Prerequisites: N/A

Project Details: *(At least 150 words)*

Magneto Hydrodynamics (MHD) is a theoretically mature field of study of the electrically influenced fluids. This project is a theoretical attempt at trying to ascertain the design and specifications of an electromagnetic shield that can be used as an augmentation for the Earth's EM field to withstand severe solar storms and CME events. Such events have occurred in the past with considerably mild consequences, as our technological development was not mature enough. In present times, the overdependence on electricity have led to unprecedented technological development, but we are still unable to withstand powerful Coronal Mass Ejections (CMEs). In this project we will perform a theoretical evaluation of different techniques that can be used to divert / deflect the plasma clouds to reduce the particle density that impacts the Earth's magnetosphere. The idea is to invert the use of a Buzzard Ramscoop device and evaluate the movement pathways of the particle clouds using MHD relations.

Comments/Notes: This project will utilize COMSOL & MATLAB for simulation purposes. The same will be provided from the host Institute.