



# Goddard Space Flight Center 2009 Sample Student Projects

## Required Academic Level

Junior/Senior Undergraduate,  
Graduate/Masters,  
Graduate/Doctorate

## Category

*Engineering*

## Subcategory

*Optics*

## Project Title

*Optical Design Survey for Rapid Concept Development*

## Project Description

Abstract I propose to collect optical designs to add to an in-house database of existing telescopes and optical instrumentation for GSFC use for rapid concept development. Many telescopes and instruments currently are in operation both on the ground and in space, and some are available here at GSFC for quick look-up. Many new design forms can be found and archived to improve the look-up capability that currently exists. Background The design of an optical instrument is generally a sequential process, and can be lengthy in its initial layout. Analytical methods provide the best methods for laying an optical design based on the science requirements, but oftentimes, new designs end up being similar or incremental advancements of existing instruments. This proposed work will improve the rapid development of design concepts by building onto the existing database by adding designs that will be available for quick access during periods of rapid concept development, primarily proposal efforts. Technical Objectives and Approach 1. Collect optical designs from current and past space flight missions 2. Use SLIDERS or other design tools to build an archive of telescope designs 3. Use SLIDERS or other design tools to build an archive of instrument designs 4. Add designs into the existing spreadsheet database for wide distribution within GSFC.

## Mentor's Expectation of Student

I expect you to be able to: -- have an interest in optical design -- work well independently -- enjoy computer work -- occasionally take part in other activities at Goddard

## Discipline of Project and/or Background Needed to successfully complete the project

Optical Engineering

## Skills

Problem Solving, Research, Technical Writing, Computer Modeling/Simulation, Image Processing