

## ME 964-002 Project Proposal

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**Project Title:** Monte Carlo simulation with scattering medium and specular reflection

**Description of project:**

Develop the code for a Monte Carlo simulation that has isotropic scattering and a specularly reflective surface. The geometry will have 2 surfaces, based on a parabolic trough CSP collector, so a parabolic trough and a cylindrical collector. The scattering and reflection are expected to affect different portions of the simulation: the scattering affects the how collimated the sun's light incident on the geometry, while optical depth of the reflective geometry will scatter little light.

**Goals of analysis (anticipated results):**

The value of interest for a CSP plant is the radiation flux on the collector. This analysis will determine how the radiation flux changes with trough reflectance, collector absorptance, and sun position.

**How this is related to topics covered in class:**

The Monte Carlo simulation is a numerical solution to the radiative transfer equation.