

# SNAP Telescope

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## ABSTRACT

The SuperNova/Acceleration Probe (SNAP) mission will require a two-meter class telescope delivering diffraction limited images spanning a one degree field in the visible and near infrared wavelength regime. This requirement, equivalent to nearly one billion pixel resolution, places stringent demands on its optical system in terms of field flatness, image quality, and freedom from chromatic aberration. We discuss the advantages of annular-field three-mirror anastigmat (TMA) telescopes for applications such as SNAP, and describe the features of the specific optical configuration that we have baselined for the SNAP mission. We discuss the mechanical design and choice of materials for the telescope. Then we present detailed ray traces and diffraction calculations for our baseline optical design. We briefly discuss stray light and tolerance issues, and present a preliminary wavefront error budget for the SNAP Telescope. We conclude by describing some of tasks to be carried out during the upcoming SNAP research and development phase.

**Keywords:** three-mirror telescopes, space astronomy, wide-field imaging