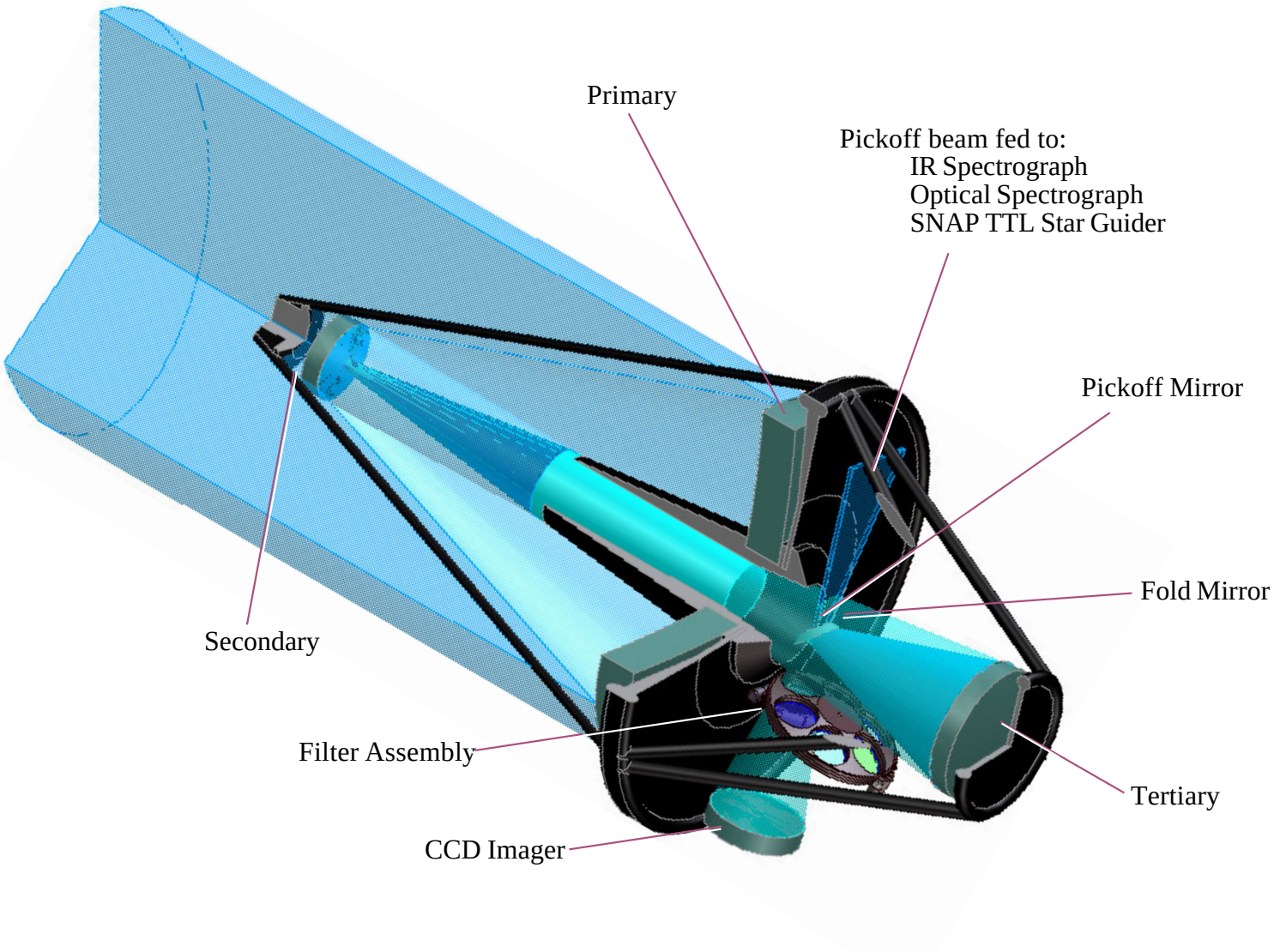
OPTICAL DESIGN

and

PERFORMANCE

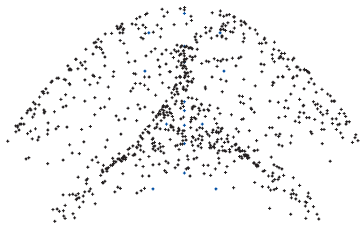
OPTICAL SYSTEM CHARACTERISTICS

- Two-meter aperture
- One square degree working field of view
- 350 to 1700 nm wavelength range
- Plate scale: under study, expect ~ 100 microns/arcsecond
- Must accommodate within Delta-IV 4-meter shroud
- Numerous alternative optical configurations investigated
- Three-mirror anastigmat identified as best choice
- Aberrations and optical performance:
    - goal -- diffraction limited at 1 micron wavelength
    - diffraction blur HWZ = 0.12 arcsec at 1 micron
    - geometrical blur HWZ = 0.05 arcsecond

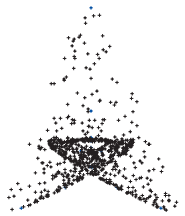

Primary
Pickoff beam fed to:
IR Spectrograph
Optical Spectrograph
SNAP TTL Star Guider
Pickoff Mirror
Fold Mirror
Secondary
Filter Assembly
Tertiary
CCD Imager

Optical Performance (Spot Diagram):

0.68deg



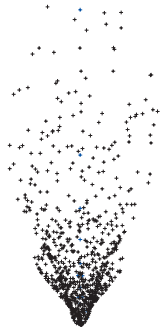
0.57deg



10microns

0.46deg

0.34deg



OPTICS DEVELOPMENT

- Initial Design Study: LBNL + SSL + Independent Optics Contractor
- Presently refining our 1999 baseline design
  - improved worst case geometrical blur, now 10 microns FWZ
  - tertiary mirror moved to on-axis position
  - filter wheel & auxiliary instrument pickoffs now accommodated
- Study will include tolerances, tradeoffs, thermal, stray light, integration plan
- Prepare OTA costing package for bidders