Tier 1 Technology Gaps

- Advanced Cryocoolers
- Coronagraph Contrast and Efficiency
- Coronagraph Stability
- Cryogenic Readouts for Large-Format Far-IR Detectors
- Heterodyne Far-IR Detector Systems
- High-Performance, Sub-Kelvin Coolers
- High-Reflectivity Broadband Far-UV-to-Near-IR Mirror Coatings
- High-Resolution, Large-Area, Lightweight X-ray Optics
- High-Throughput Bandpass Selection for UV/VIS
- High-Throughput, Large-Format Object Selection Technologies for Multi-Object and Integral Field Spectroscopy
- Large Cryogenic Optics for the Mid IR to Far IR
- Large-Format, High-Resolution Focal Plane Arrays
- Large-Format, Low-Darkrate, High-Efficiency, Photon-Counting, Solar-blind, Far- and Near-UV Detectors
- Large-Format, Low-Noise and Ultralow-Noise Far-IR Direct Detectors
- Long-Wavelength-Blocking Filters for X-ray Micro-Calorimeters
- Low-Stress, High-Stability, X-ray Reflective Coatings
- Mirror Technologies for High Angular Resolution (UV/Vis/Near IR)
- Stellar Reflex Motion Sensitivity – Astrometry
- Stellar Reflex Motion Sensitivity – Extreme Precision Radial Velocity
- Vis/Near-IR Detection Sensitivity

Tier 2 Technology Gaps

- Broadband X-ray Detectors
- Compact, Integrated Spectrometers for 100 to 1000 μm
- Far-IR Imaging Interferometer for High-Resolution Spectroscopy
- Far-IR Spatio-Spectral Interferometry
- Fast, Low-Noise, Megapixel X-ray Imaging Arrays with Moderate Spectral Resolution
- High-Efficiency X-ray Grating Arrays for High-Resolution Spectroscopy
- High-Resolution, Direct-Detection Spectrometers for Far-IR Wavelengths
- Improving the Calibration of Far-IR Heterodyne Measurements
- Large-Aperture Deployable Antennas for Far-IR/THz/sub-mm Astronomy for Frequencies over 100 GHz
- Large-Format, High-Spectral-Resolution, Small-Pixel X-ray Focal-Plane Arrays
- Polarization-Preserving Millimeter-Wave Optical Elements
- Precision Timing for Space-Based Astrophysics
- Rapid Readout Electronics for X-ray Detectors
- Starshade Deployment and Shape Stability
- Starshade Starlight Suppression and Model Validation
- UV Detection Sensitivity

Tier 3 Technology Gaps

- Advancement of X-ray Polarimeter Sensitivity
- Detection Stability in Mid-IR
- Far-UV Imaging Bandpass Filters
- High-Efficiency Far-UV Mirror
- High-Efficiency, Low-Scatter, High- and Low-Ruling-Density, High- and Low-Blazed-Angle UV Gratings
- High-Quantum-Efficiency, Solar-Blind, Broadband Near-UV Detector
- Photon-Counting, Large-Format UV Detectors
- Short-Wave UV Coatings
- Warm Readout Electronics for Large-Format Far-IR Detectors

Tier 4 Technology Gaps

- Advanced Millimeter-Wave Focal-Plane Arrays for CMB Polarimetry
- Improving the Photometric and Spectro-Photometric Precision of Time-Domain and Time-Series Measurements
- UV/Opt/Near-IR Tunable Narrow-Band Imaging Capability
- Very-Wide-Field Focusing Instrument for Time-Domain X-ray Astronomy

Tier 5 Technology Gaps

- Complex Ultra-Stable Structures for Future Gravitational-Wave Missions
- Disturbance Reduction for Gravitational-Wave Missions
- Gravitational Reference Sensor
- High-Performance Spectral Dispersion Component/Device
- High-Power, High-Stability Laser for Gravitational-Wave Missions
- Laser Phase Measurement Chain for a Decihertz Gravitational-Wave Mission
- Micro-Newton Thrusters for Gravitational Wave-Missions
- Stable Telescopes for Gravitational Wave-Missions