CUSTOM SPECTROSCOPIC **SOLUTIONS**

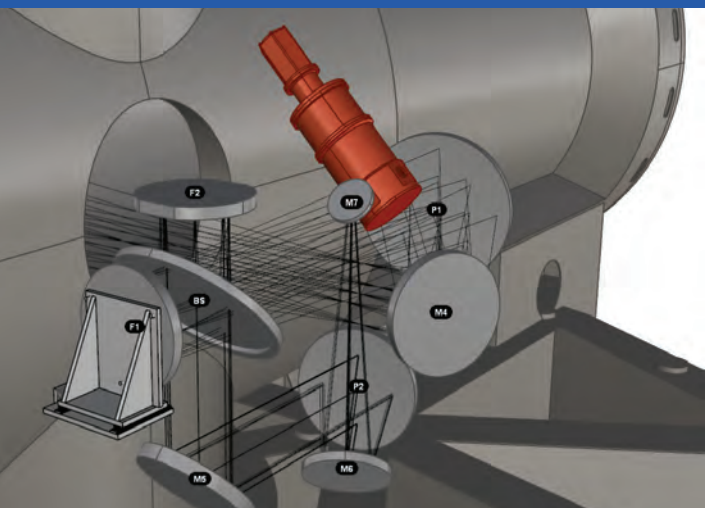
Blue Sky Spectroscopy Inc. specializes in custom spectroscopic solutions with emphasis on high throughput Fourier transform spectrometers (FTS) optimized for operation at far-infrared and submillimetre wavelengths.

We also produce single pixel or imaging spectroscopic solutions at mid- and near-infrared wavelengths. We provide complete system engineering from optical, mechanical and electronic design through to manufacture, assembly, integration and verification of state of the art instrumentation.

All systems are developed under tight project management and include extensive documentation and test data. Examples include systems for the South Pole Telescope and Max Planck Institute.

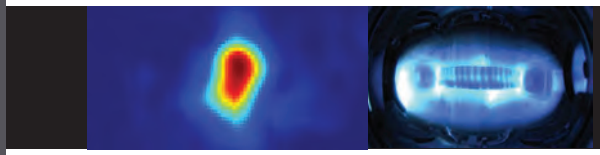
Blue Sky has developed sophisticated data processing and scientific analysis software for space astronomy missions. The code meets ESA's stringent high quality assurance standards with regards to design, documentation and validation.

3D Optical design of wavefront sensor for Cerro Chajnantor Atacama Telescope



INNOVATIVE R & D

- FTS FOR PLASMA DIAGNOSTICS
- THZ MICROSCOPY FOR MEDICAL IMAGING
- PRECISION LASER METROLOGY
- WAVEFRONT SENSOR FOR CERRO CHAJNANTOR ATACAMA TELESCOPE
- PLASMONIC LENSES - SUBWAVELENGTH IMAGING



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BLUE SKY SPECTROSCOPY

CUSTOM SPECTROSCOPIC **SOLUTIONS**

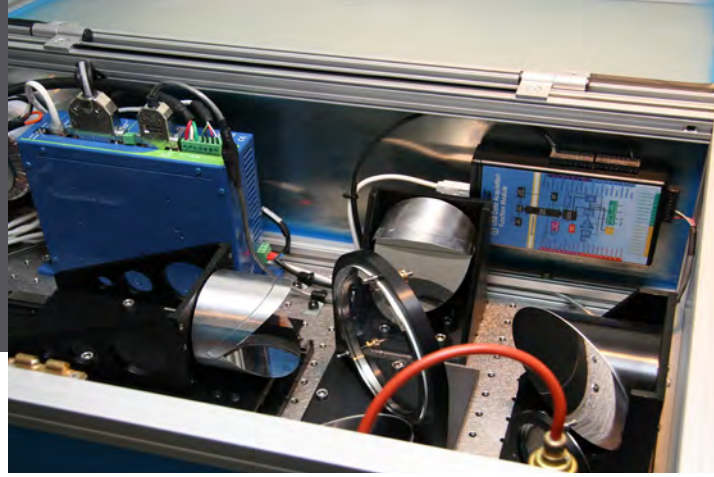
- HERITAGE IN GROUND AND SPACE BASED ASTRONOMY
- GROUND SEGMENT TEST EQUIPMENT
- DATA PROCESSING AND ANALYSIS SOFTWARE
- ATMOSPHERIC RADIATIVE TRANSFER MODELING SOFTWARE

HERSCHEL
SPACE OBSERVATORY

Blue Sky hosted the DAta Processing and Science Analysis Software (DAPSAS) centre for the imaging Fourier transform spectrometer instrument on board the Herschel Space Observatory.

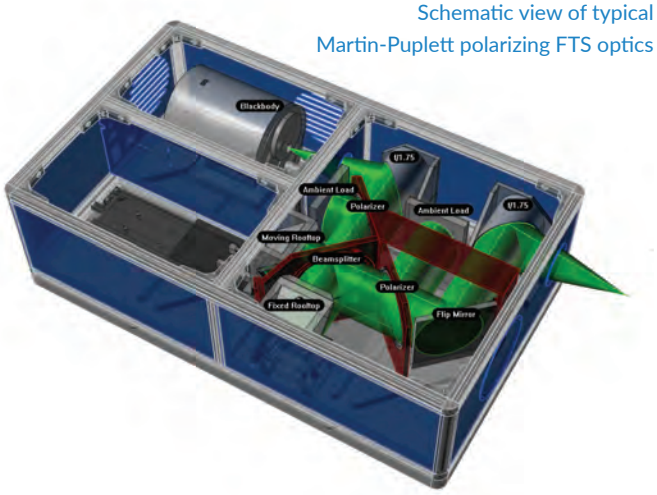
Software developed to analyze data from the SPIRE Spectrometer on Herschel is used in our commercial product line.

The throughput of Blue Sky Spectroscopy FTS is the highest commercially available, which is of particular importance in the energy starved submillimeter spectral region. Building on this pedigree, the company offers source and detector calibration services for the mid-infrared, terahertz and sub-terahertz spectral range at resolving powers up to 10,000.

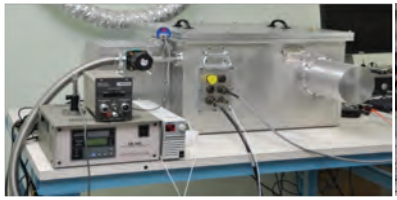


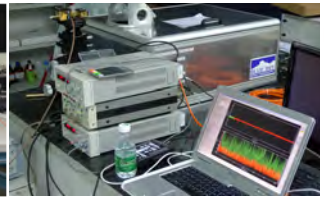
HIGH THROUGHPUT FOURIER TRANSFORM SPECTROMETERS

- Largest commercially available throughput
- Spectral coverage: 0.15 - 15 Thz
- Variable resolution: 0.15 - 5.0 Ghz
- Martin-Puplett and Mach-Zehnder designs
- Flexible access to both input/output ports
- Rapid Scan / Step-and-Integrate operation
- Gas-purged / Evacuated
- User-friendly control software
- Advanced data reduction and analysis software developed for space missions



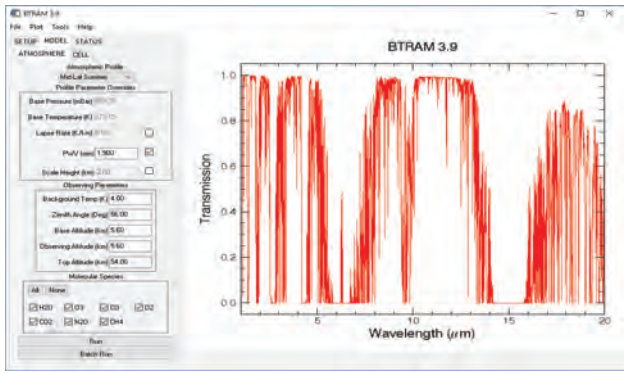
Schematic view of typical Martin-Puplett polarizing FTS optics





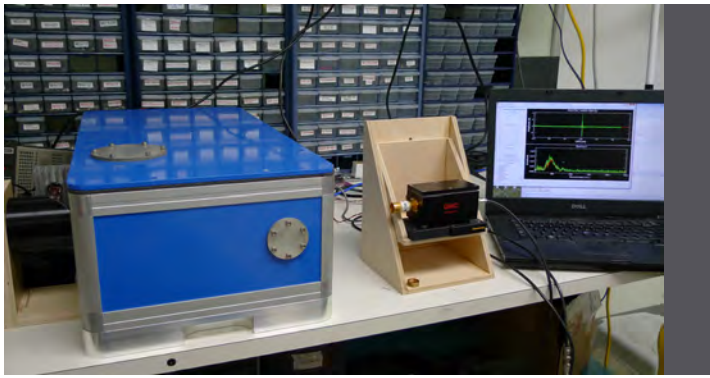
BTRAM

Our system engineering capabilities are complemented by our radiative transfer model, BTRAM, for stimulating transmission through, and emission from, the earth's atmosphere, or a gas cell containing a range of user selected gases.



PLASMA FUSION DIAGNOSTICS

- High throughput: $4x10^{-5}$ m^2sr
- Spectral coverage: 70 - 1000 GHz
- Spectral resolution: 3.75 GHz
- Martin-Puplett interferometer
- Optimized Gaussian beam optics
- Dual input and output ports
- Ultra rapid scan, repetition rate 20 ms
- Evacuated
- Customized control and data reduction software



Our partners and client base includes researchers at the following institutions: