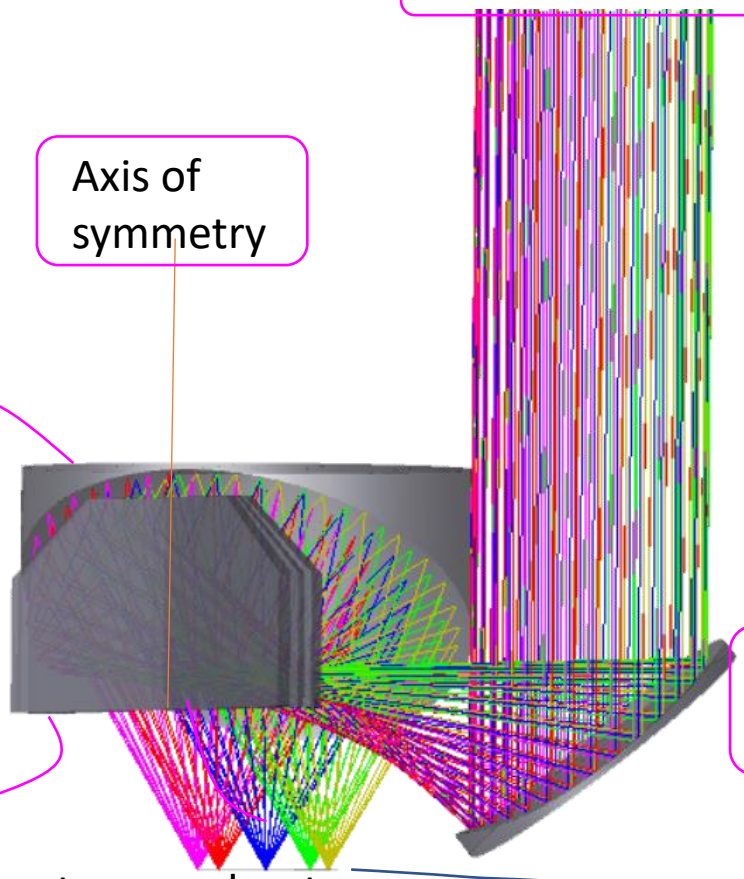
# System's Features

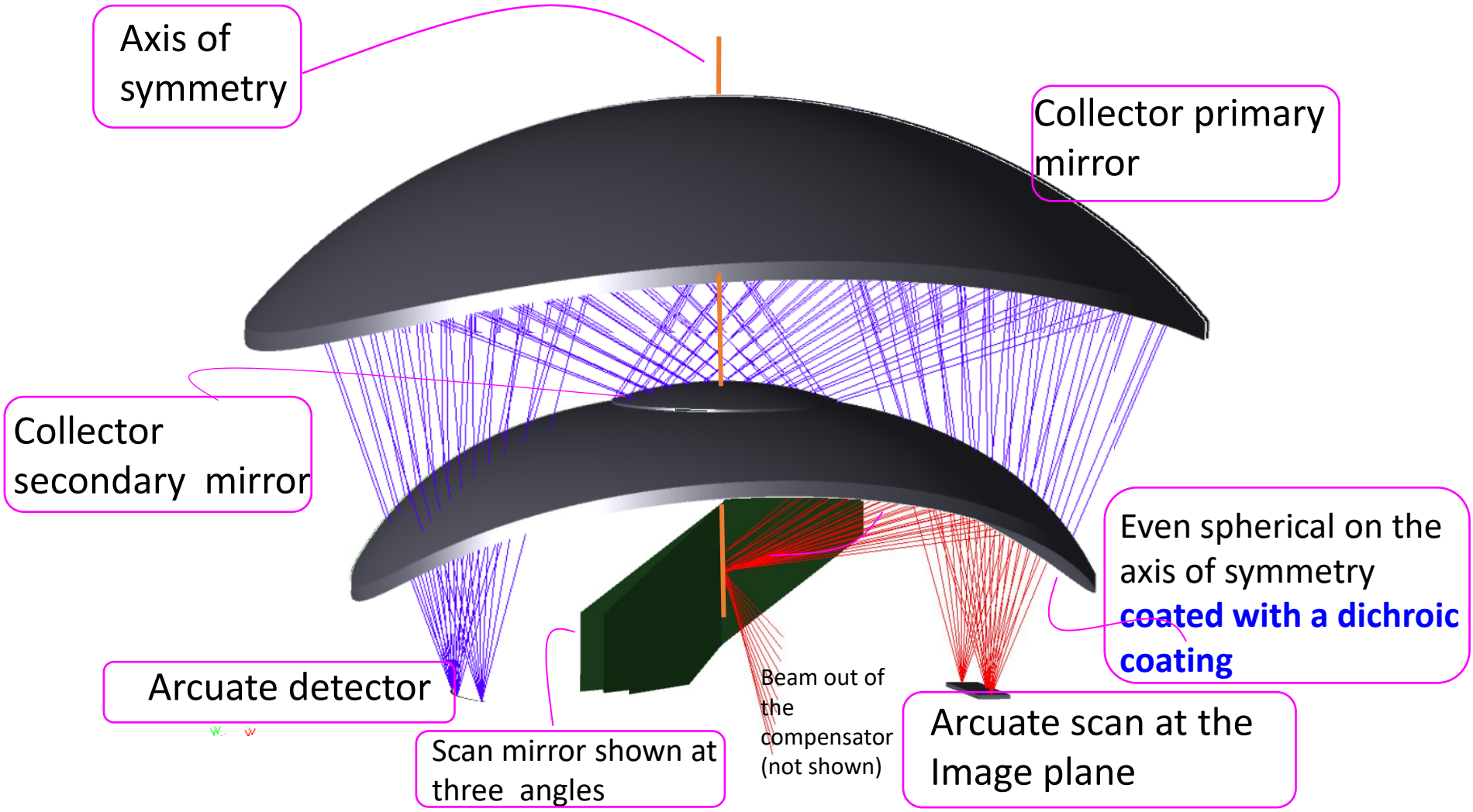
- Large fields 30 mm or more.
- Arcuate scan line in the fast scan direction- linear translation of the system for the slow scan.
- All reflective system for minimal dispersion
- High NA, the example is 0.5NA but higher NA  is possible
- High resolution, diffraction limited
- Optional low noise collection into small detectors
- Telecentric scanning
- Large working distance
- Used with a flat cranial window

# An all-reflective design another view




Note: the different colors are for different locations of the scanning spot

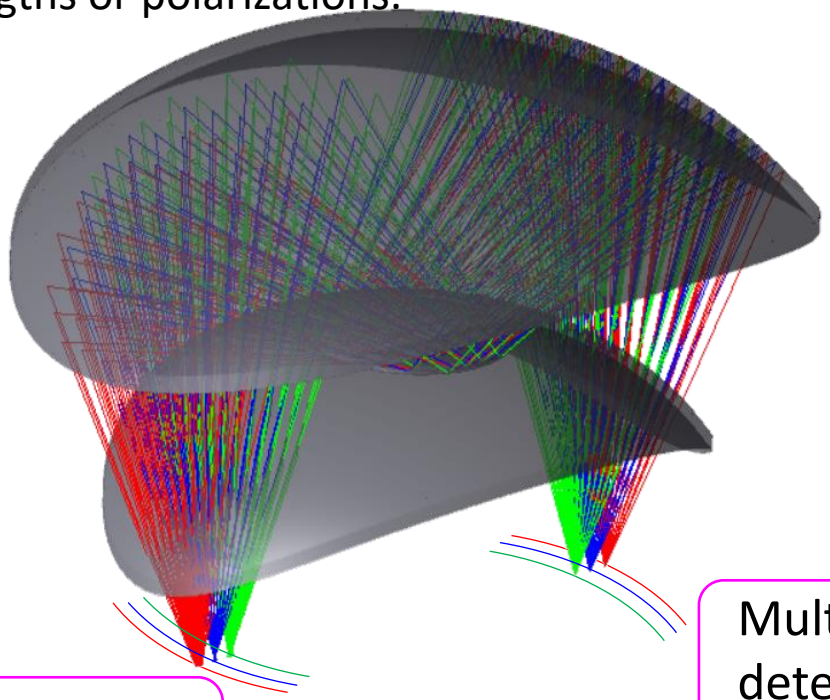
# Combined scanner and an Offner-like collector




in TPM the scanning beam is usually in the IR, like 900nm (shown in red) and the collected light is at half the wavelength at 450 nm (shown in blue) . The aspheric mirror is coated to reflect the long wavelength in the TPM case and transmit the short wavelength

# Multiple beam scanning

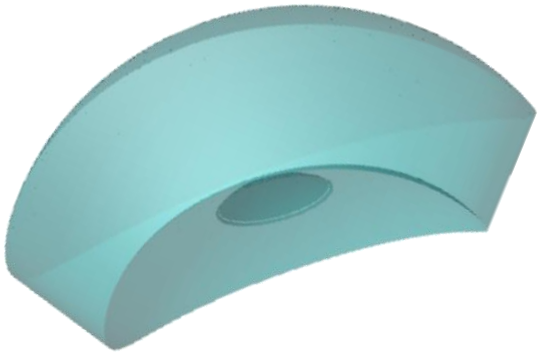
The Offner-like collector is capable of imaging multiple arcuate scan lines onto a corresponding set of multiple arcuate slit detectors as shown below for 3 color coded scan lines which could be of the same wavelength and polarization or at different wavelengths or polarizations.

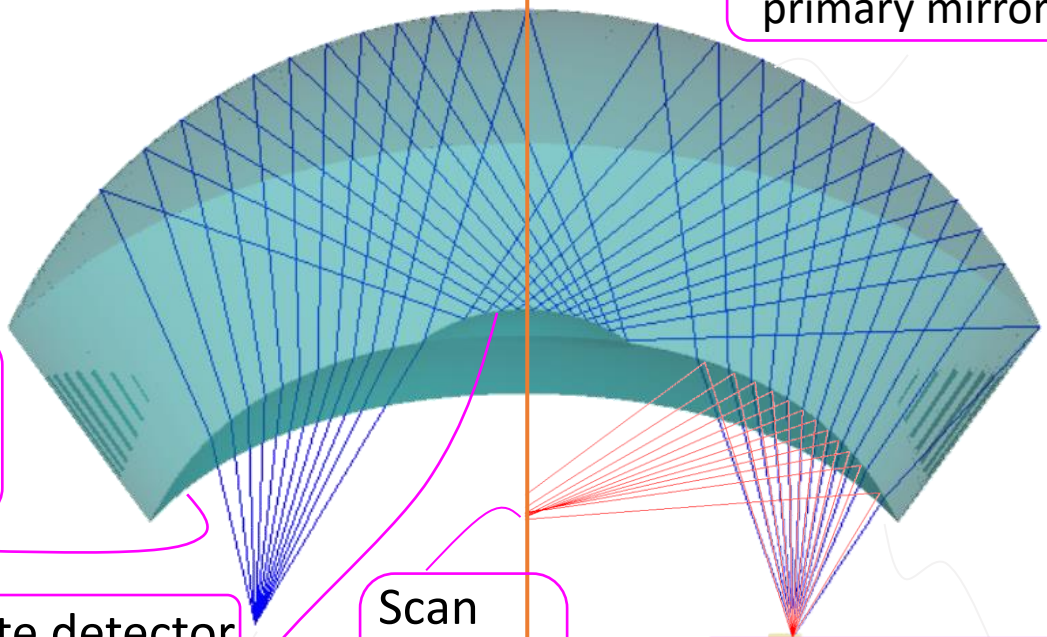


Multiple arcuate detector apertures

The detector slits are of small area and thus the low noise

# Scanner and a monolithic “glass-Offner” collector





Axis of symmetry

Offner Collector primary mirror

Toroidal mirror about the axis of symmetry **coated with a dichroic coating**

arcuate detector

Offner secondary

Scan mirror location

arcuate scan at the Image plane

# Depth scanning and Adaptive Optics (AO)

The design was examined with changes of plus minus 100 microns in the water/tissue domain (shown not to scale bellow). an AO device on the input beam (not shown) is used to  maintain the resolution at the tissue.