

3 FN-system

Each fiber in the frontend is illuminated with $f/4.8$. The image plane of the telescope is imaged onto the fiber face. Two doublets convert the $f/11$ beam of the telescope to $f/4.8$ in front of each fiber in order to minimize FRD.

The system consists of two doublets and is set up as a telecentric system. One lens is a rod lens and will be in physical contact with the fiber to minimize air/glass transitions. The lens is diffraction limited for the whole wavelength range and field.

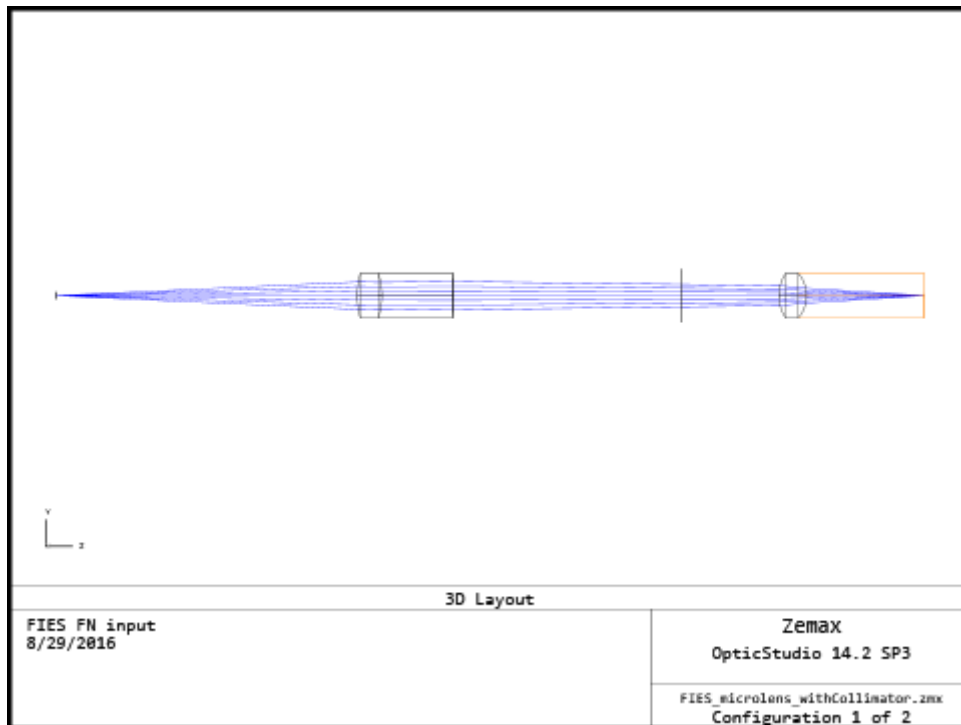


Illustration 1: Optical Layout of the FIES FN system. Left side: telescope focus, right side fiber focus.

Optical design of the FIES fiber link upgrade

Surf.Type	Comment	Radius	Thickness	Material	Coating	Semi-Diameter	Conic	TCE x 1E-6
0 OBJECT	Standard	Infinity	1.00000E+005			0.20500	0.0...	0.00000
1 STOP	Standard	Infinity	-1.00000E+005	P		4544.89108	0.0...	0.00000
2	Standard	Infinity	16.86136	V		0.20500	0.0...	0.00000
3 (aper)	Standard	4.87084	1.37410	S-FPL53	S	1.25000	0.0...	-
4 (aper)	Standard	-3.87784	4.00000	S-LAL7	S	1.25000	0.0...	-
5	Standard	-17.17737	12.69660	V		0.96425	0.0...	0.00000
6 (aper)	Standard	Infinity	5.47800			1.50000	0.0...	0.00000
7 (aper)	Standard	2.21739	1.54397	S-FPL51		1.25000	0.0...	-
8 (aper)	Standard	-1.93459	6.57716	S-LAL7		1.25000	0.0...	-
9 IMAGE	Standard	Infinity	-	SILICA		0.09014	0.0...	-

Illustration 2: Optical description data of the FN input system

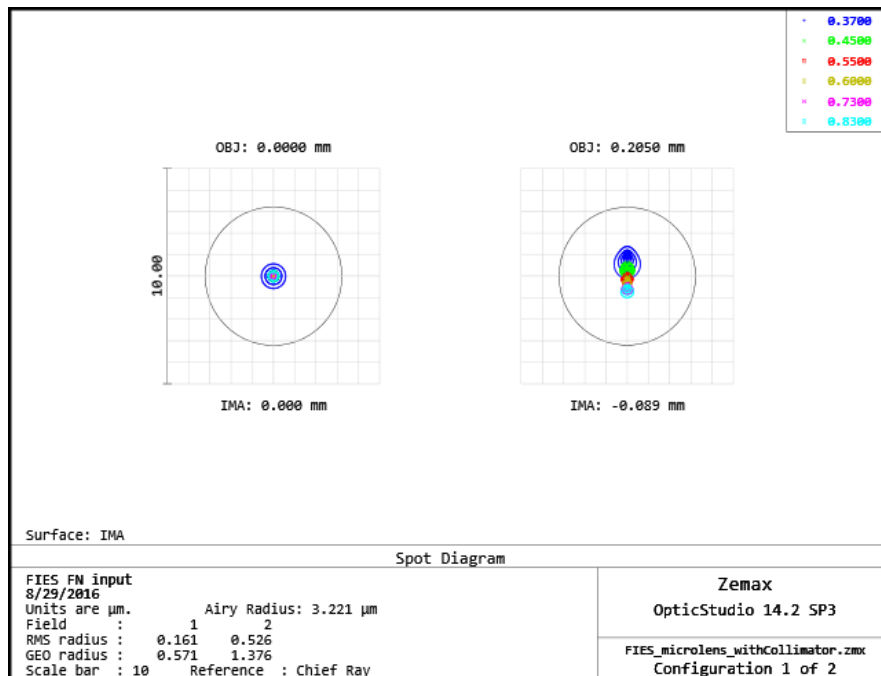


Illustration 3: Spot Diagrams for the FIES FN input system

For the given fiber sizes and F-numbers the sky coverage is as follows:

Fiber name	Sky coverage
High-res / mid-res / Pol	1.49"
Low-res	3.00"