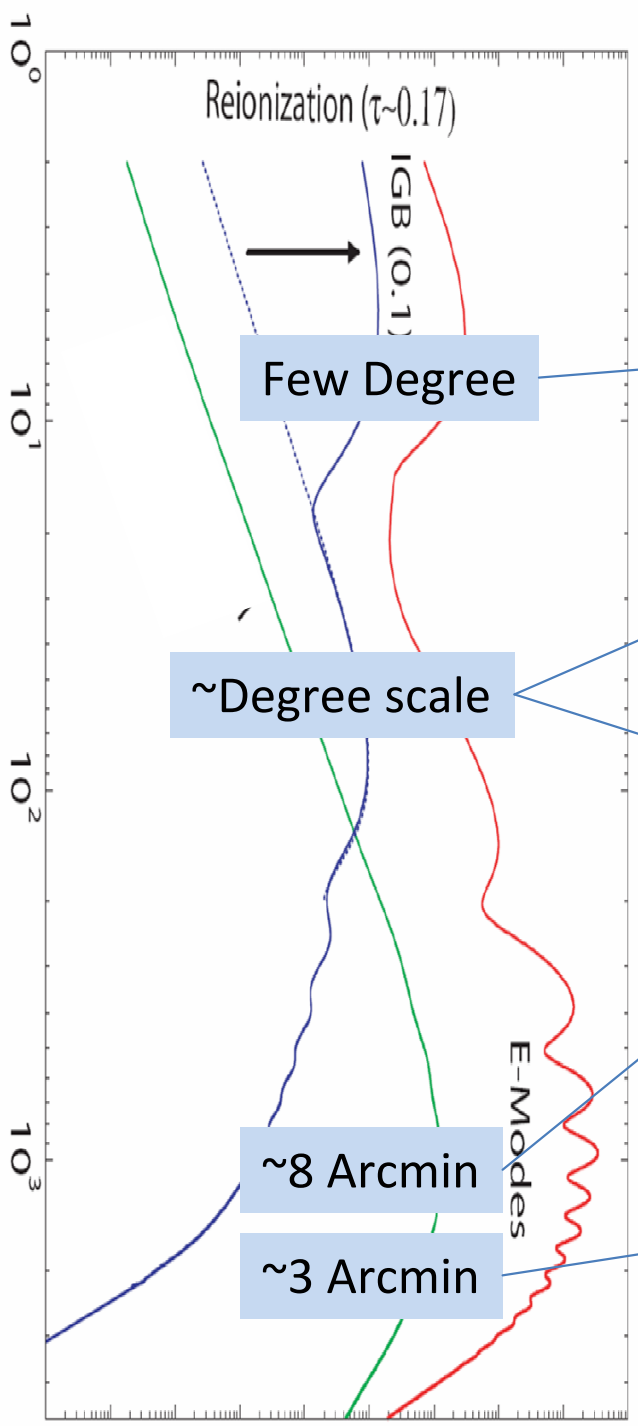
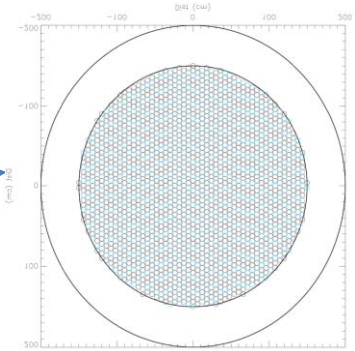
Optical Elements for CMBPol

Resolution – Telescope Map

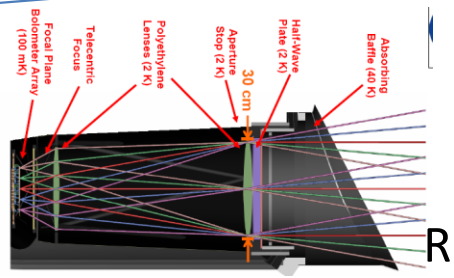
Imaging systems (not interferometers or multi-moded)



Few Degree

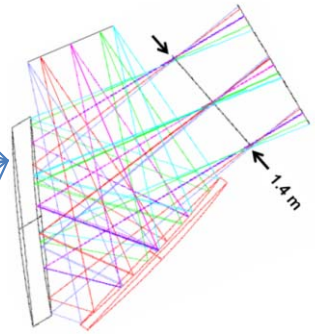


Bare array



Refractor

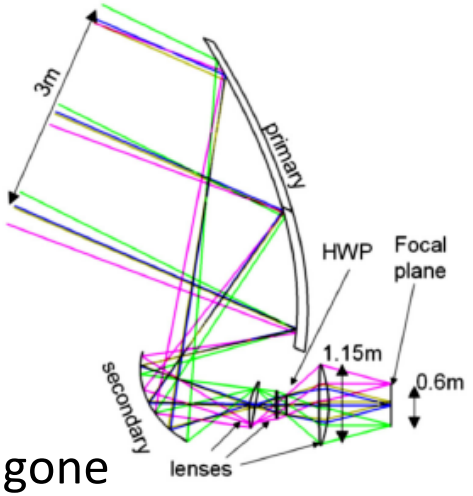
~Degree scale



Crossed Dragone

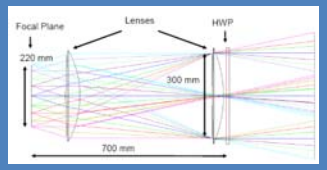
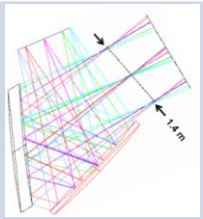
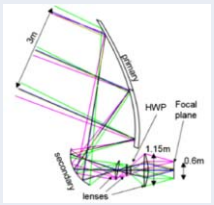
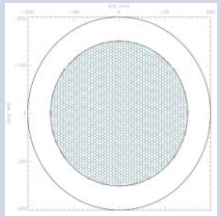
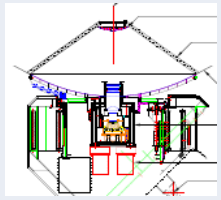
~8 Arcmin

~3 Arcmin



Gregorian Dragone

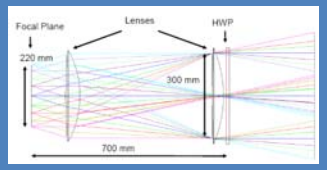
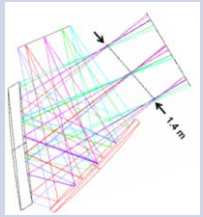
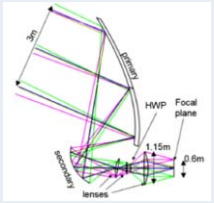
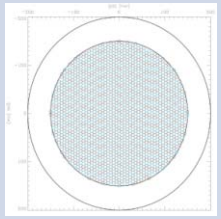
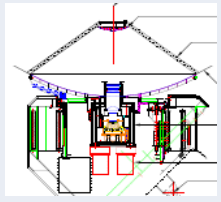
TRL for optical elements

	Optical element	Special challenge	Need Coating?
Refractor 	**Lenses: 5**		**YES Coatings for Lenses and possibly planar array**
Crossed 	Mirrors only: 5	Cold stop: 3	MAYBE possible planar array
Greg 	Mirrors only 5(7)	Large SI Lenses TRL 3	YES Coatings for Lenses and possibly planar array
Bare 	Feeds TRL: 5(7)		NO
Cass 	Mirrors: TRL 5(7)	Foam Support 3	YES Coatings for Lenses and possibly planar array

List of talks

- On-axis Cassegrain – Clem Pryke
- Offset Dual reflectors- Huan Tran
- Refractors- John Kovac
- Layered AR Coatings – Chao-Lin Kuo
- Simulated Dielectric AR Coatings – Jeff McMahon

We will know more by 2012-15

Refractor 	**BICEP 2** **SPUD** **SPIDER**	
Crossed 	CLOVER Poincare QUIET Quixote ABS	
Greg 	POLARBEAR ACT-Pol EBEX Planck SPT-Pol COFE	
Bare 	MBI –BRAIN(interferometer)	
Cass 	QUAD C-BASS (low freq) Blast-pol (high freq)	

Need for new Simulation tools

- Not strictly required- measurements in lab adequate (implies no optimization)
- Need for dielectrics in physical optics
- Need more HFSS for AR coatings
  - Simulated AR Coatings
  - Highly curved layers (lenslet)
- Faster Physical Optics