ESD on CP and ITM Elliptical Baffle aperture

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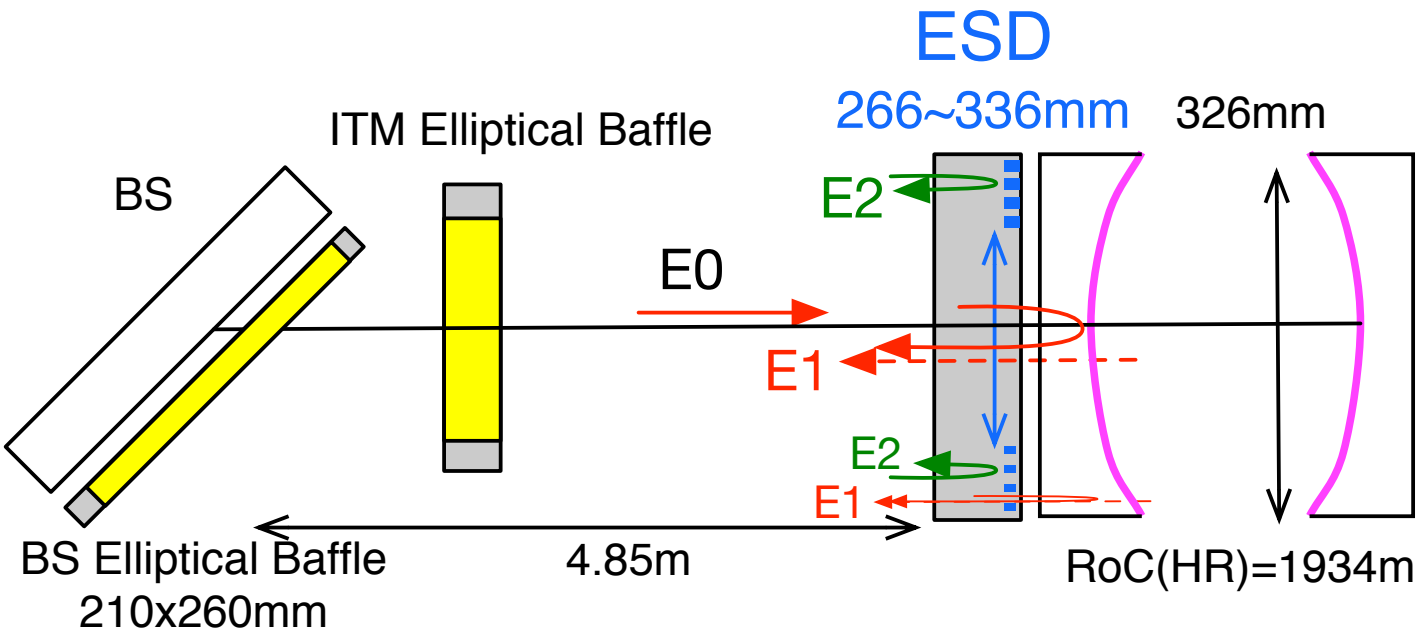
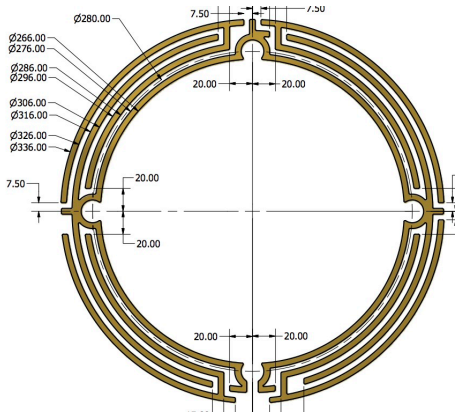




$$TEM00(w,R) = Exp(-(\frac{1}{w^2} + \frac{k}{2R})r^2)$$

$$E0 = +TEM00(5.3cm, -1934m/1.45)$$

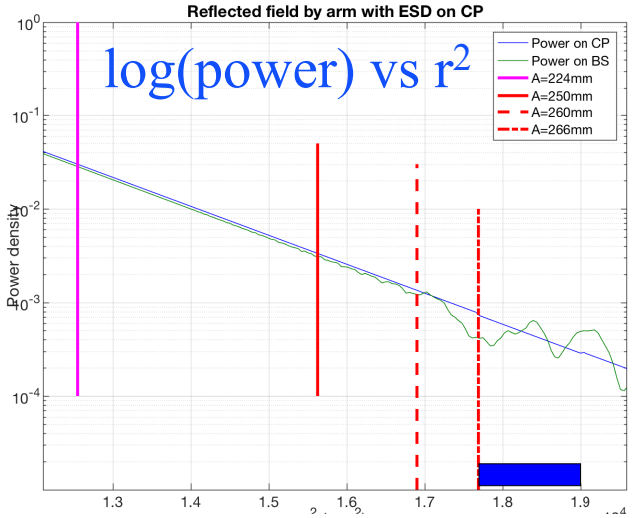
$$E1 = -TEM00(5.3cm, +1934m/1.45)$$

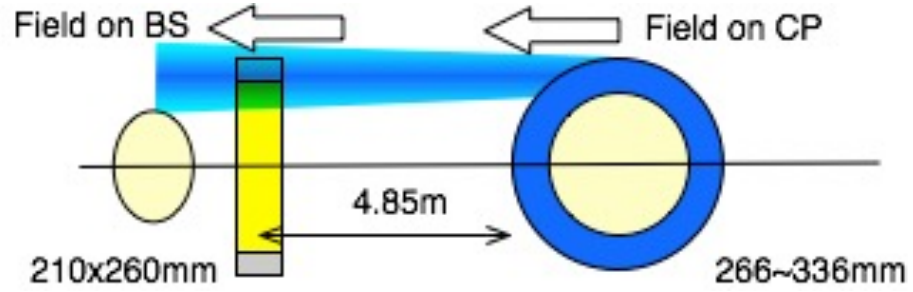
$$E2 = +TEM00(5.3cm, -1934m/1.45)$$

ESD simplified as

1) 4 rings with 10mm width and 10mm spacing
2) Almost perfect reflector

Field on BS reflected by arm+CP with ESD



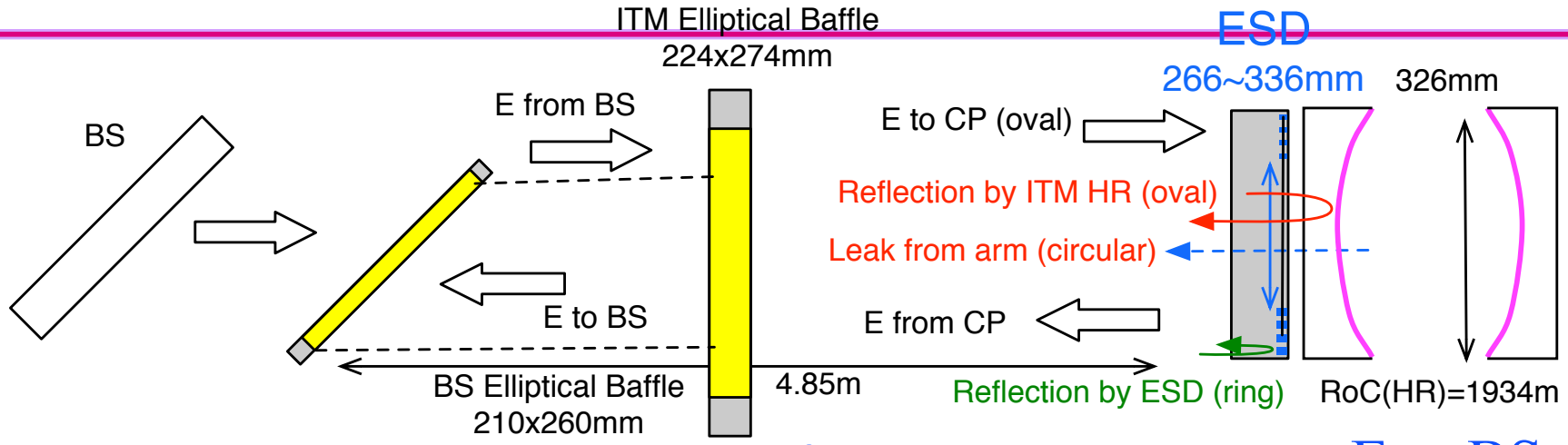


224mm : current ITM elliptical baffle size (224x274mm)
250mm : region with little effects by ESD
260mm : Beam splitter elliptical baffle size (210x260mm)
266mm : inner aperture size of ESD ring

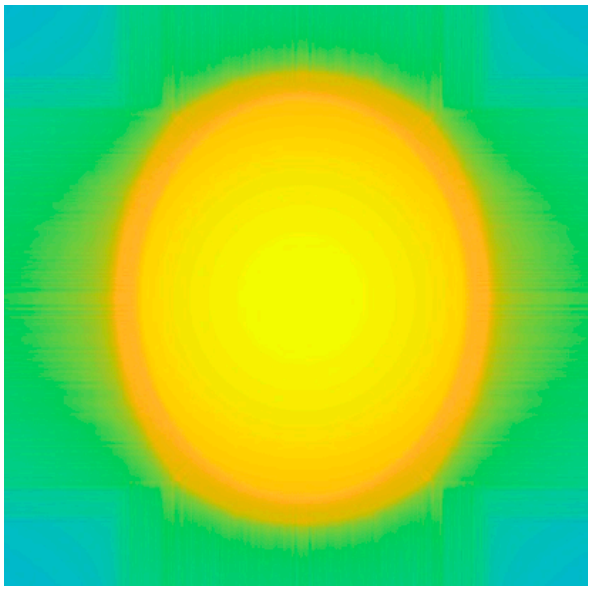
ITM elliptical baffle size : 260x260mm

- From BS side, nothing useful coming outside of 260mm
- From arm side, outside of 266mm are hidden by ESD
- Diffraction of reflected field by ESD makes field noisy outside of 260mm
- Clipping noise, ~exp($2a^2/w^2$), will be reduced by order of magnitude by increasing 224mm to 260mm

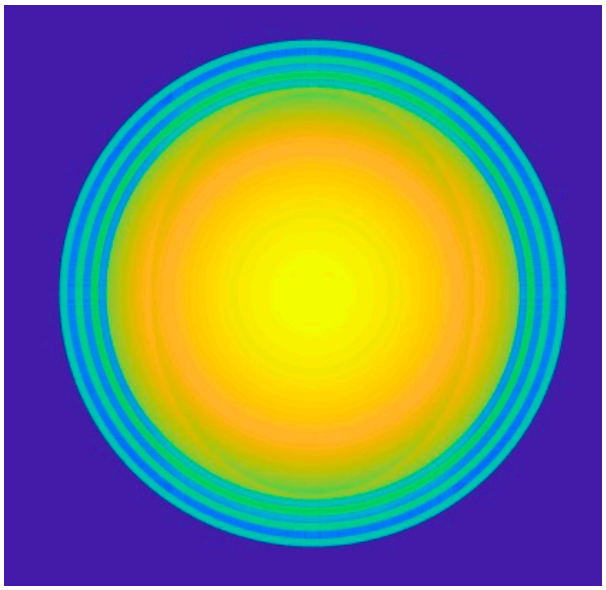
Fields with BS baffle



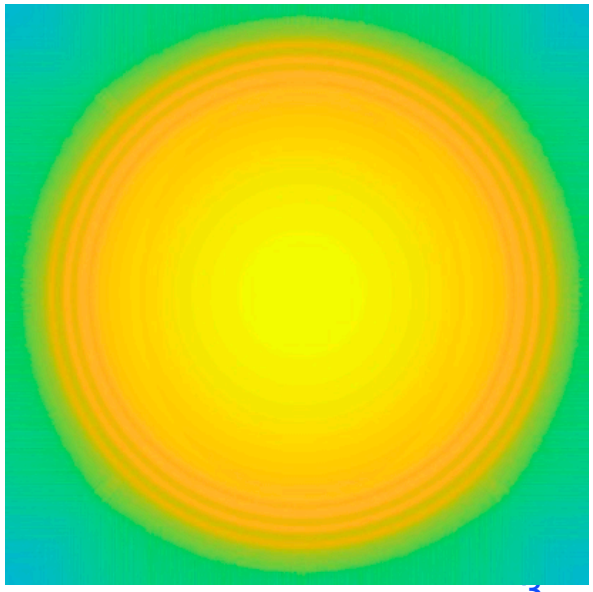
E to CP

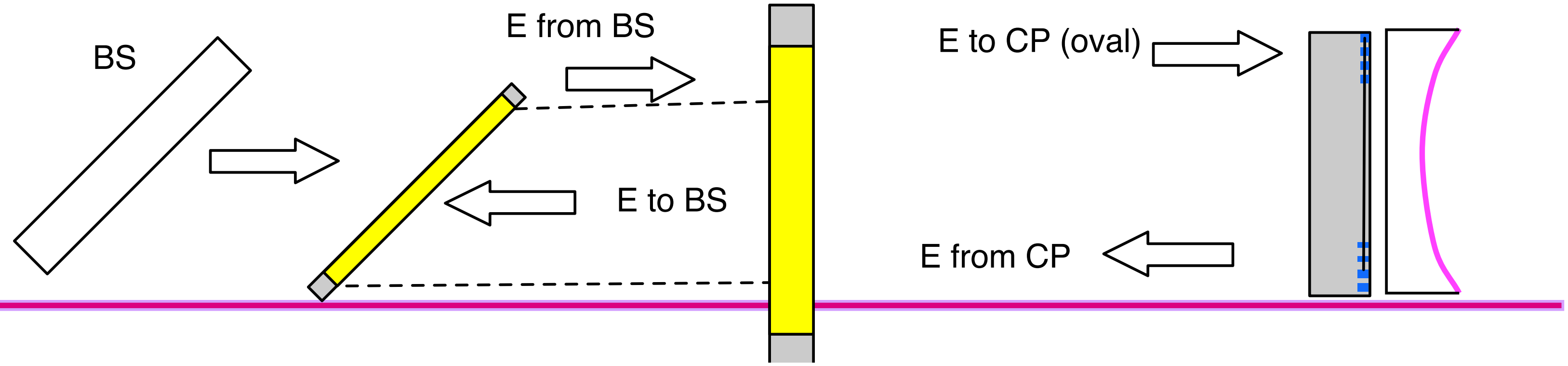


E from CP



E to BS





ITM baffle > BS baffle and no clipping effect
Outside of 260mm is bumpy