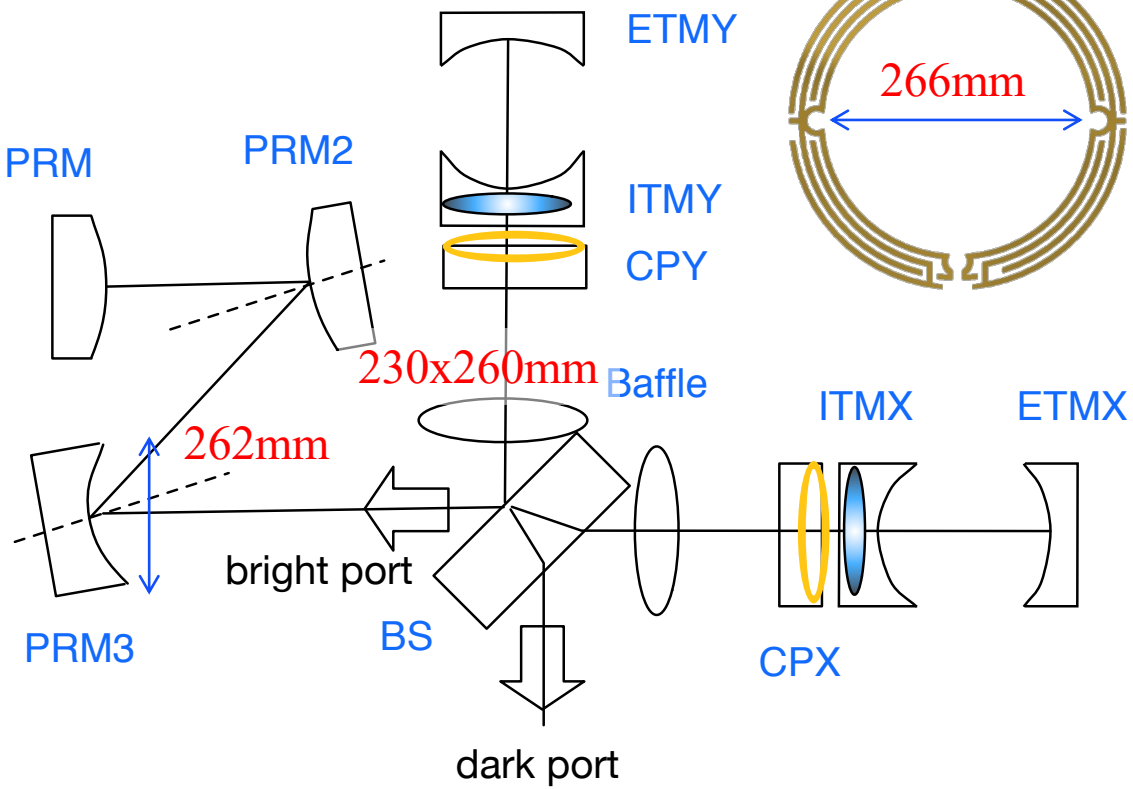
and Field from ITM

Effects of different sizes of BS ~~and RM3~~ for A+

- Study of various losses for different sizes of BS ~~and RM3~~
- PRFPM is used
  - » No maps of aberrations and ESD included to emphasize geometrical effects
  - » BS size : 37cm (6cm), 45cm (6cm) ~~and 55cm (6.5cm)~~ : no BS baffle
  - » RM3 size : 26.2cm ~~and 30cm~~
  - » Beam centering on ITM : 0cm and 6mm
- Configurations (BS, ~~RM,~~ beam)
  - – Case 1 (37,26,0), Case 2 (37,26,6), Case 3 (45,26,0), Case 4 (45,26,6), ~~Case 5 (45,30,0), Case 6 (45,30,6), Case 7 (55,26,0), Case 8 (55,26,6), Case 9 (55,30,0), Case10 (55,30,6)~~
- Losses calculated
  - » BS – power in (x and y arm)-> power out (dark and bright)
  - » RM3 – power from RM2->RM3->BS, BS->RM3->RM2

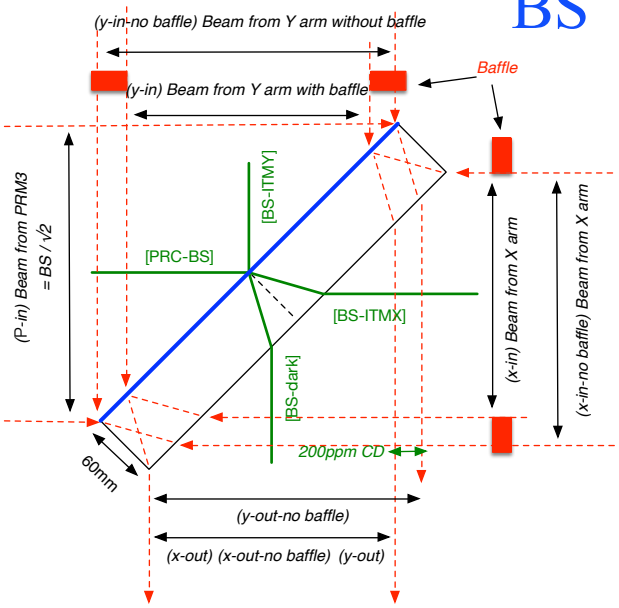
Geometry related to performance



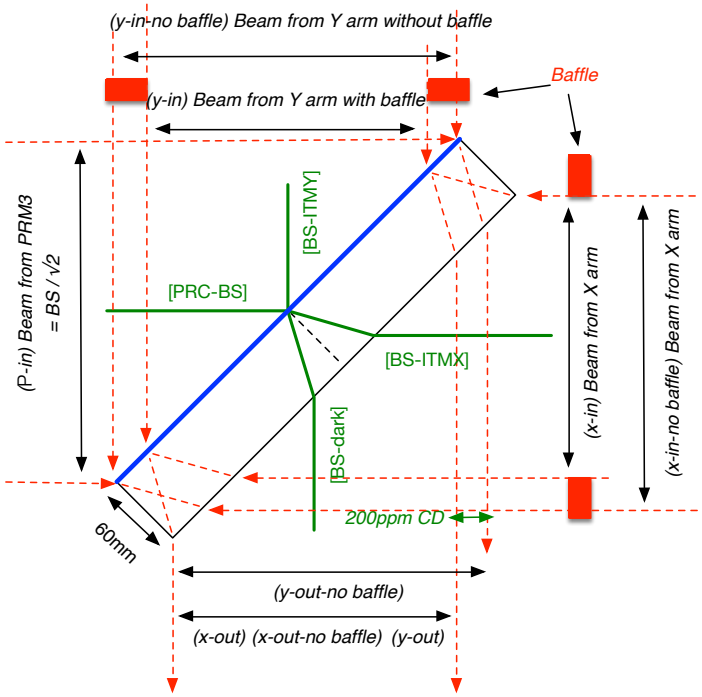
ESD on CP

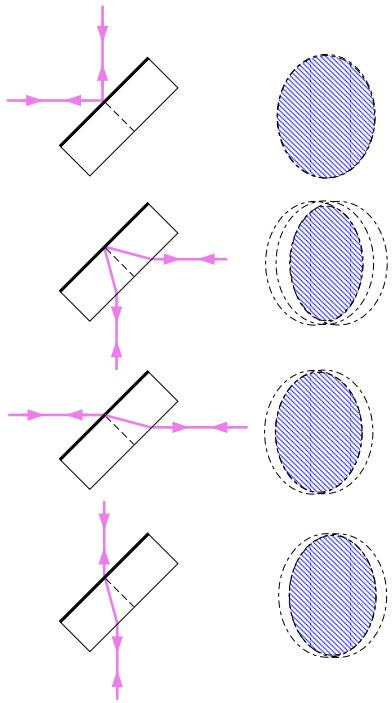
(modeled by a simple with hole with 266mm aperture)

BS

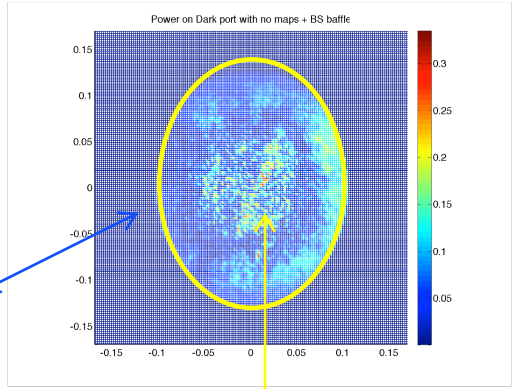


BS baffle designed to suppress CD



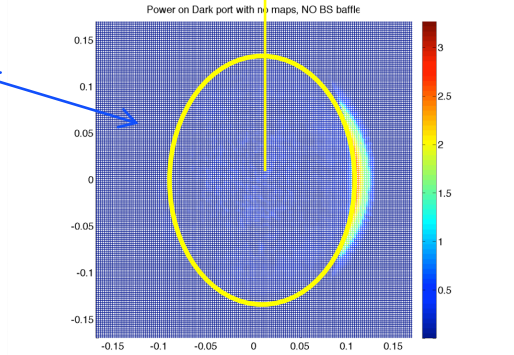


With BS baffle : 7ppm

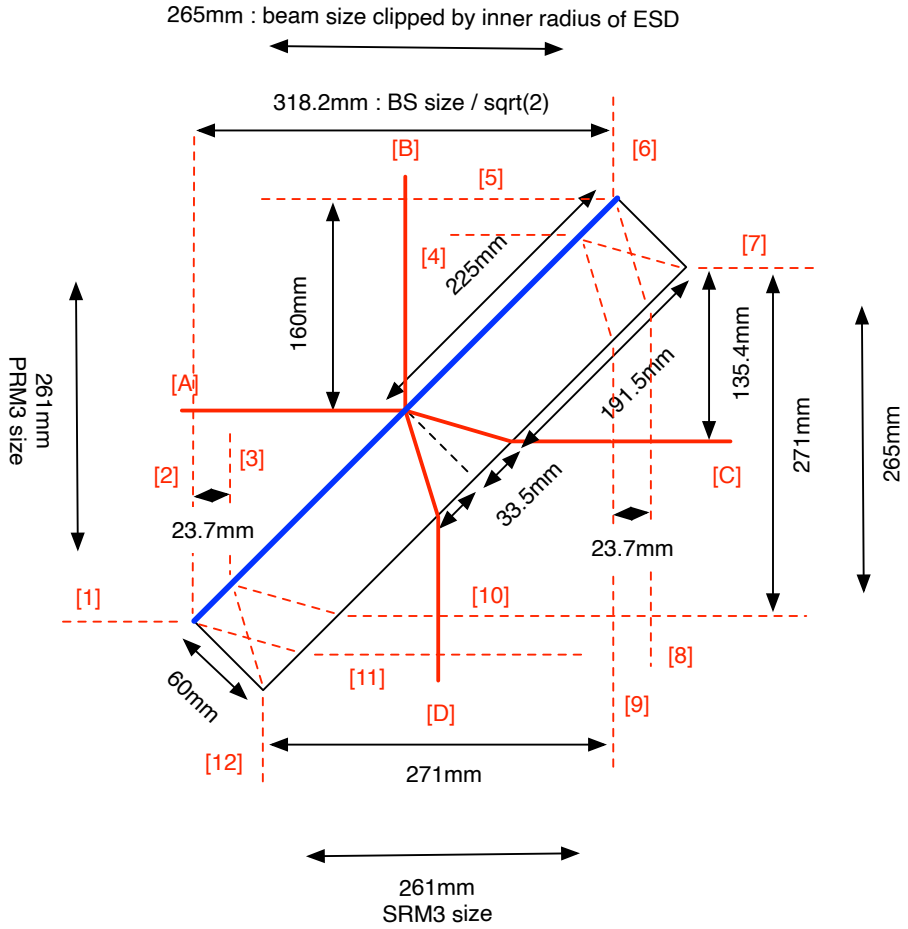


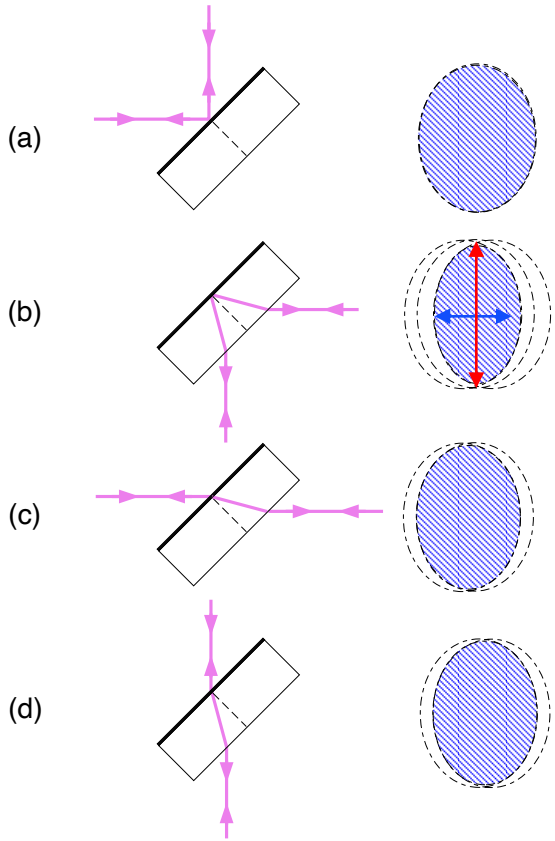
Without BS baffle : 210ppm

(d) – (b)



45cm BS geometry





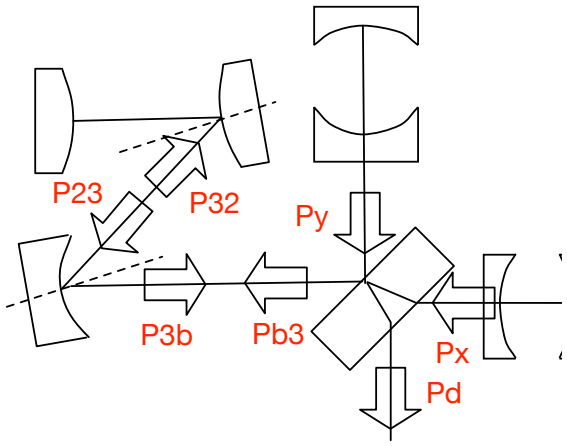
45cm / 2 / 5.3cm
= 4.2

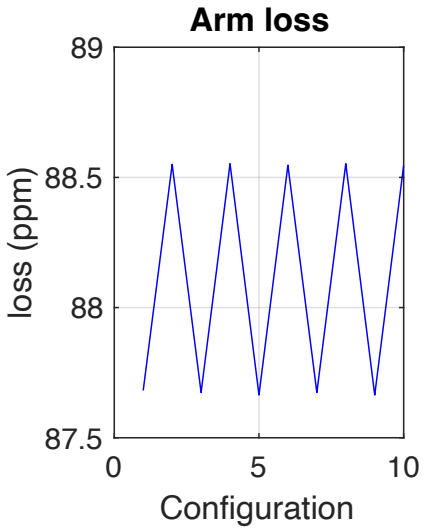
27.1cm / 2 / 5.3
= 2.6

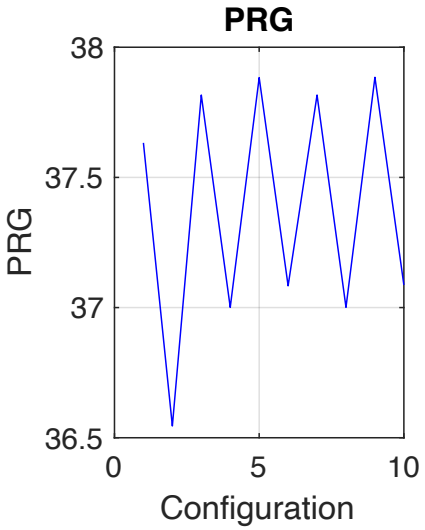
Case 1 (37,26,0), Case 2 (37,26,6),
Case 3 (45,26,0), Case 4 (45,26,6),

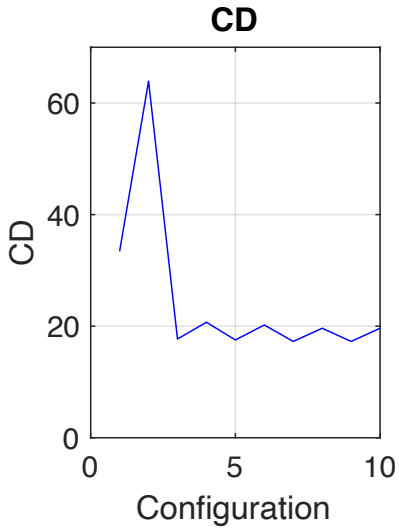
$45/\sqrt{2} = 31.8$cm

Results





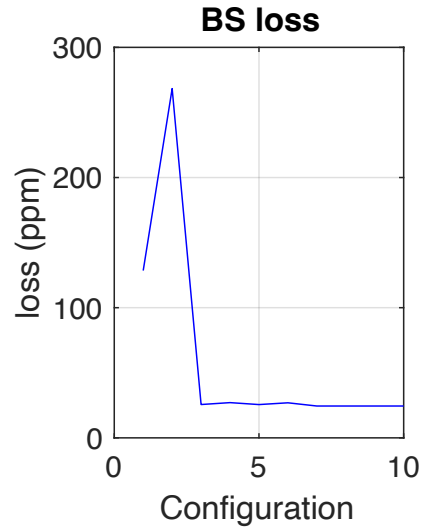


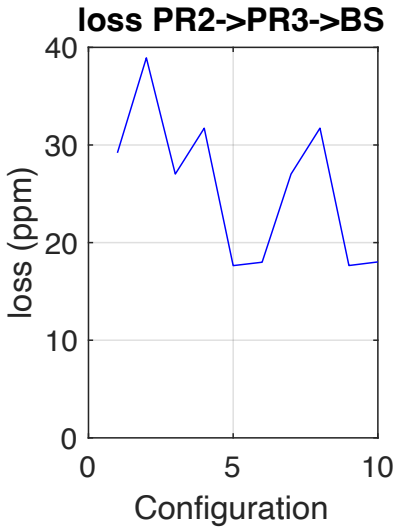


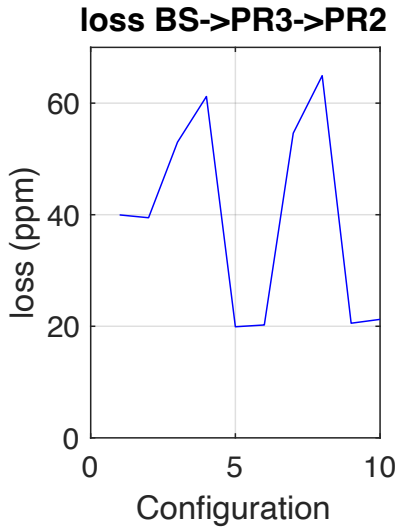
BS loss =
(Pd+Pb3)/(Px+Py)-1

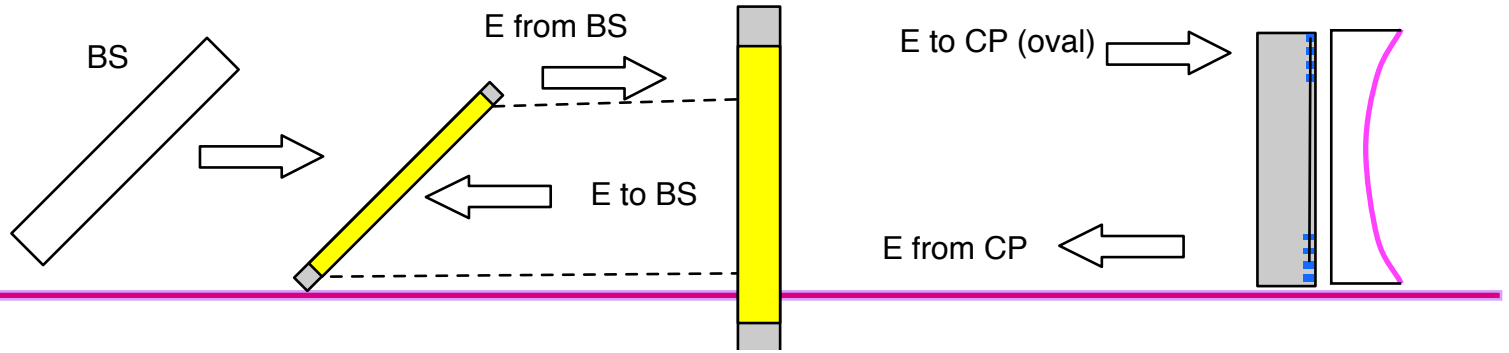
PR2 → BS loss =
P3b / P23 – 1

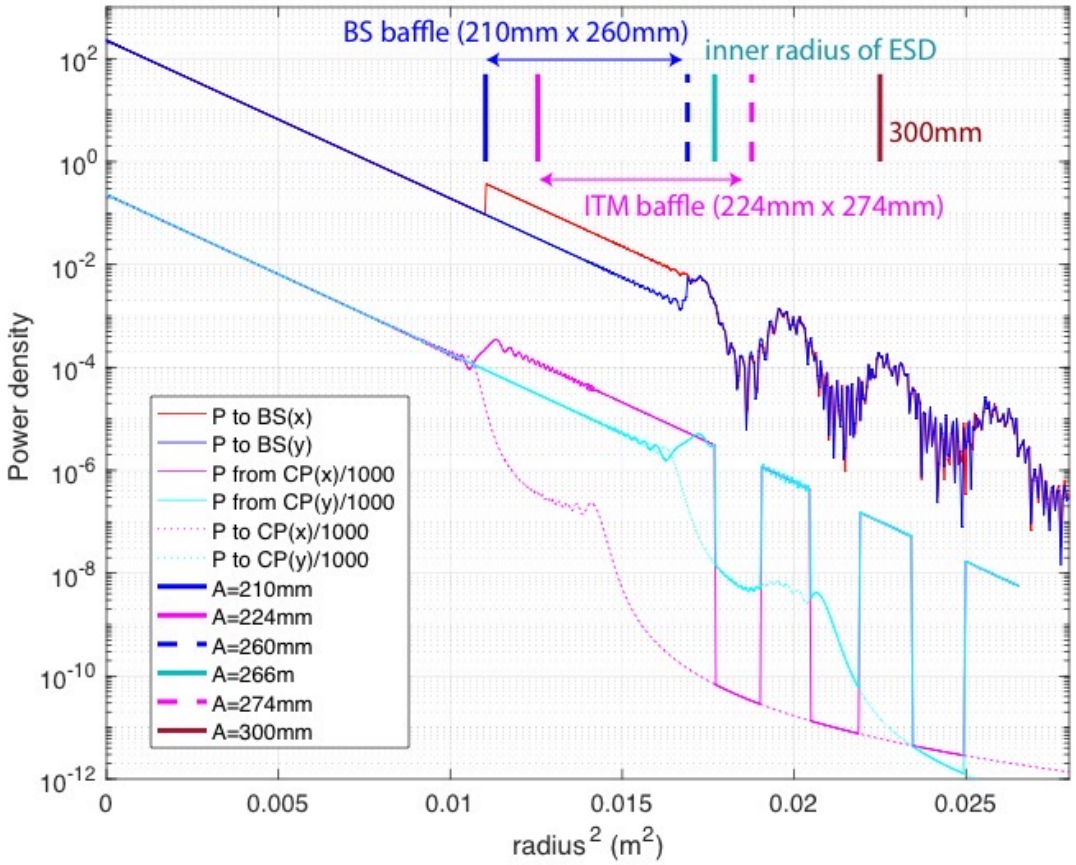
BS → PR2 loss =
P32 / Pb3 - 1











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

E from CP