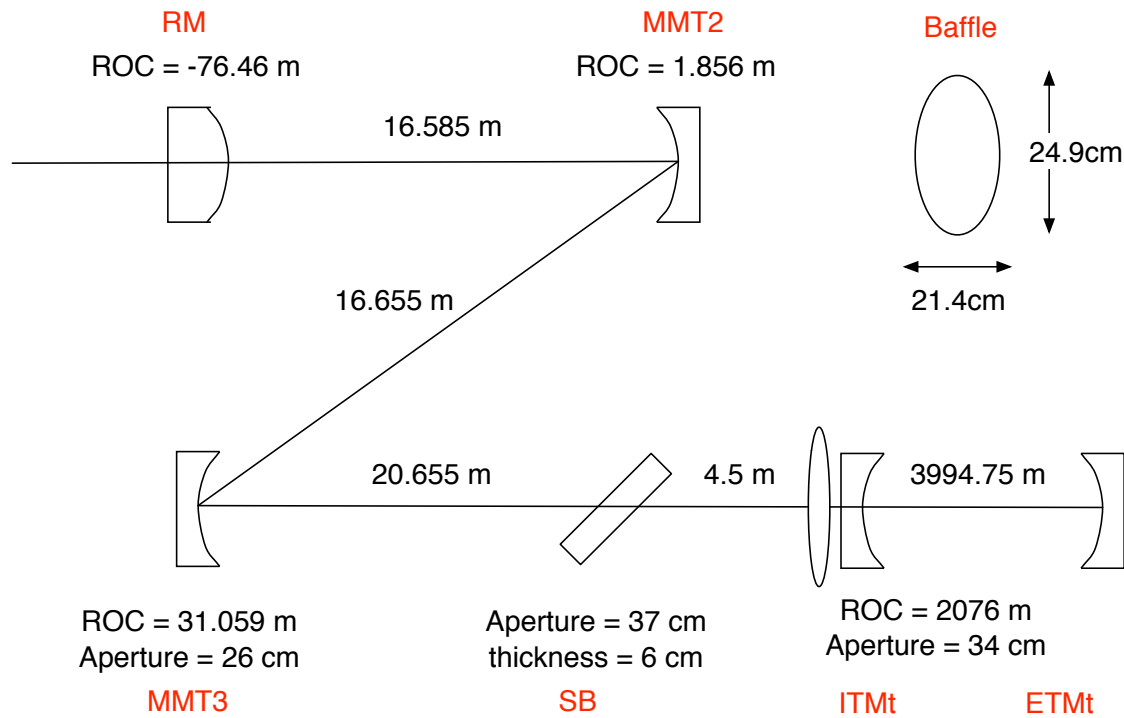
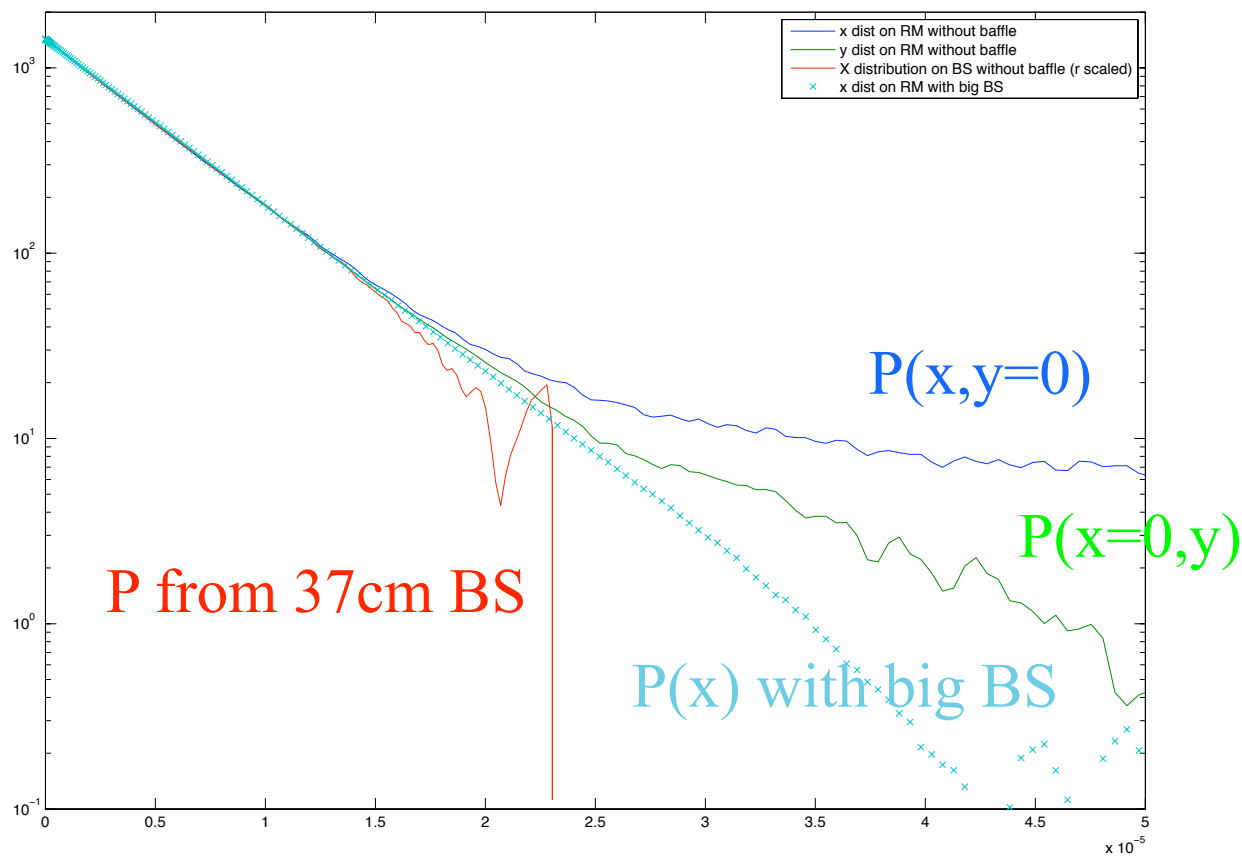


Diffraction effect in Stable Michelson cavity



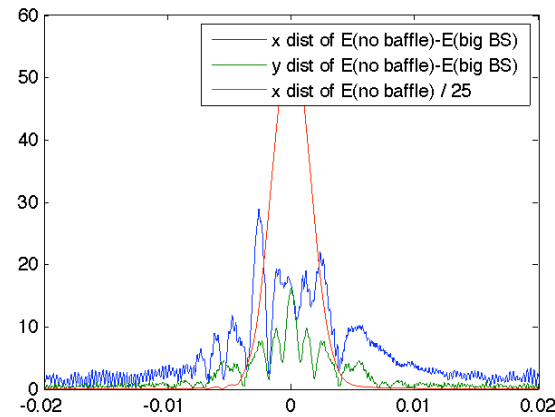
- (1) without baffle
- (2) with baffle and
- (3) with big BS/MMT3

Power distribution on RM

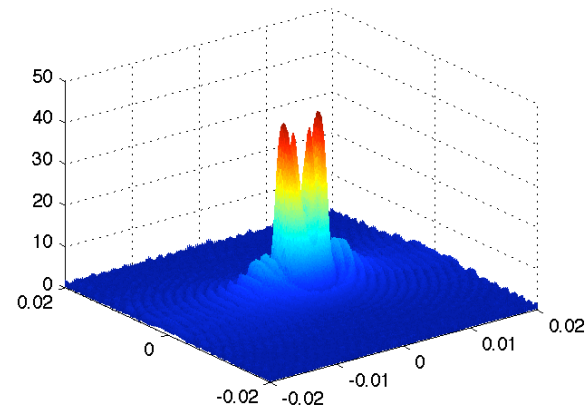
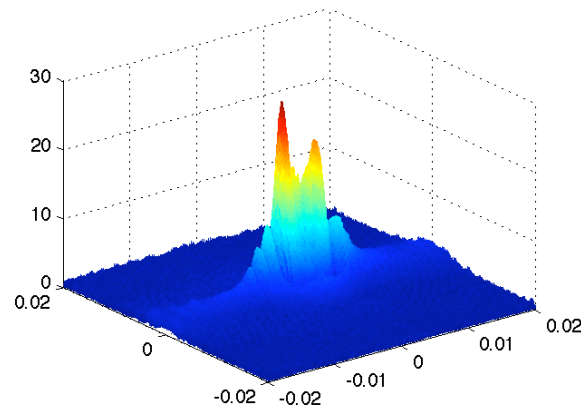
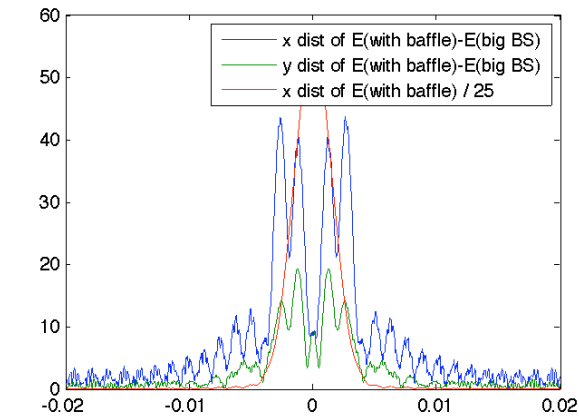


Field on RM(37cmBS) - Field on RM(big BS)

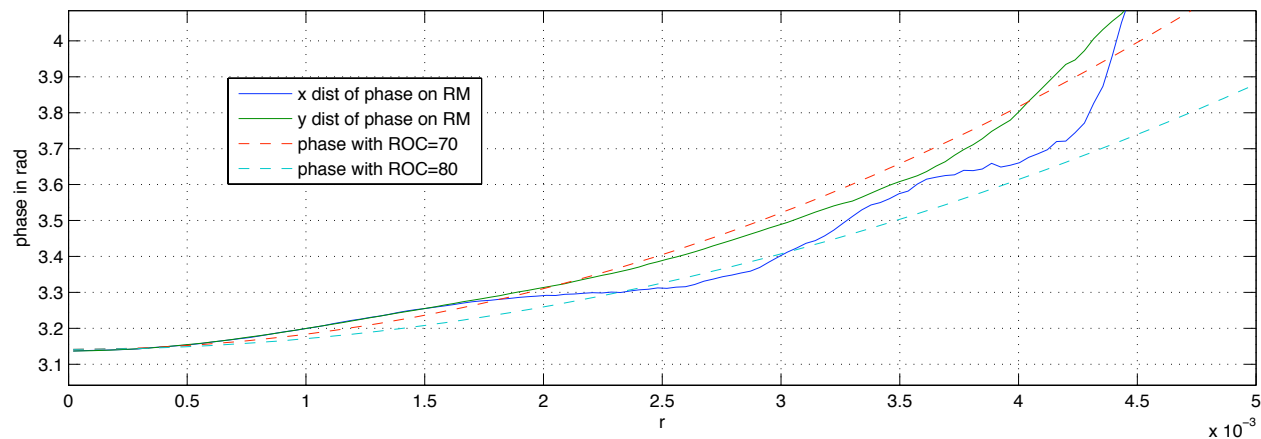
without baffle



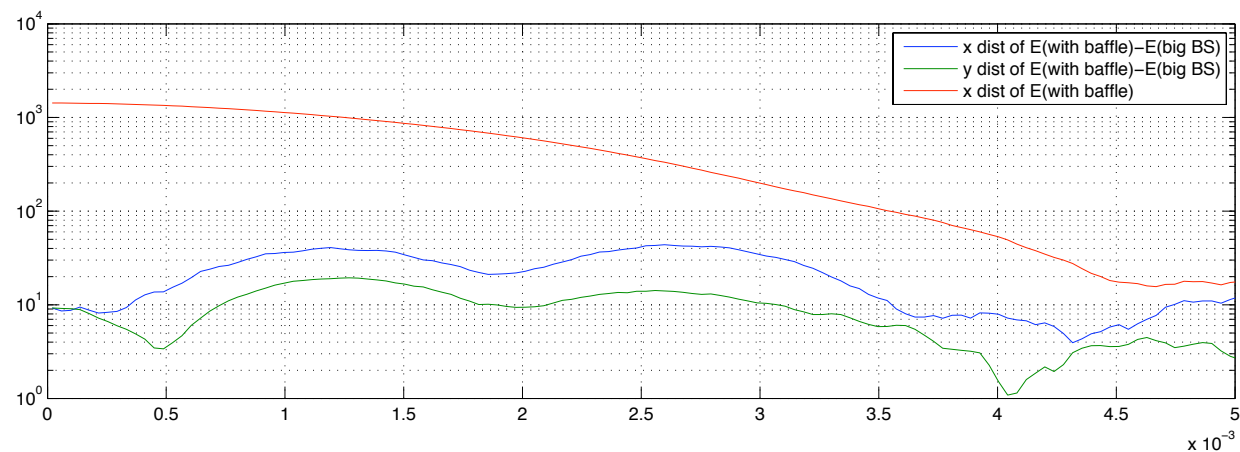
With baffle



Astigmatism of field on RM

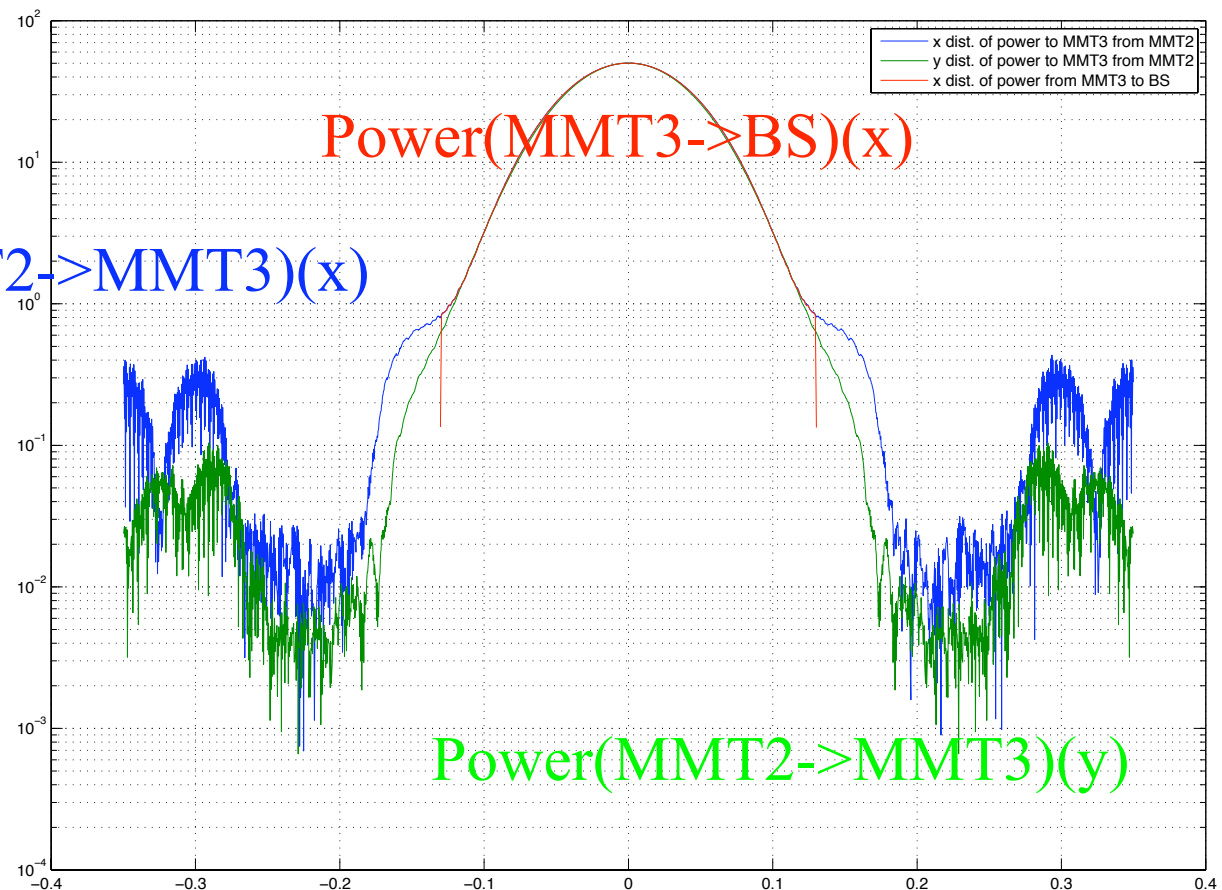


$$\text{Exp}(-ikr^2/(2R))$$



Power loss on MMT3 (no baffle, ITMY \leftrightarrow SRM case)

loss = 330ppm
(energy outside of
MMT3 surface)



Loss under different conditions

MMT aperture (cm)	beam size on ITM (cm)	Coupled cavity	loss on MMT3 (ppm)
26cm	6cm	Y-arm + SRM(*)	330
26cm	6cm	X-arm + SRM(*)	600
28cm	6cm	Y-arm + SRM	140
26cm	5.5cm (**)	Y-arm + SRM	47
26cm	5.5cm (**)	X-arm + SRM	60

(*) When a baffle is placed in front of ITMY, Y-arm+SRM configuration comes very close to X-arm+SRM case.

(**) http://ilog.ligo-wa.caltech.edu:7285/advligo/Test_Mass_Beam_Sizes, asymmetric case with 5.5cm on ITM and 6.2cm on ETM.

With the baffle size of Mike's choice - 214mm x 249mm - the beam going through a baffle is cut off by 250ppm. If the baffle size of 1cm larger in both direction (224mm x 259mm), the cutoff is 55ppm. The numbers in the above table were calculated without baffles.