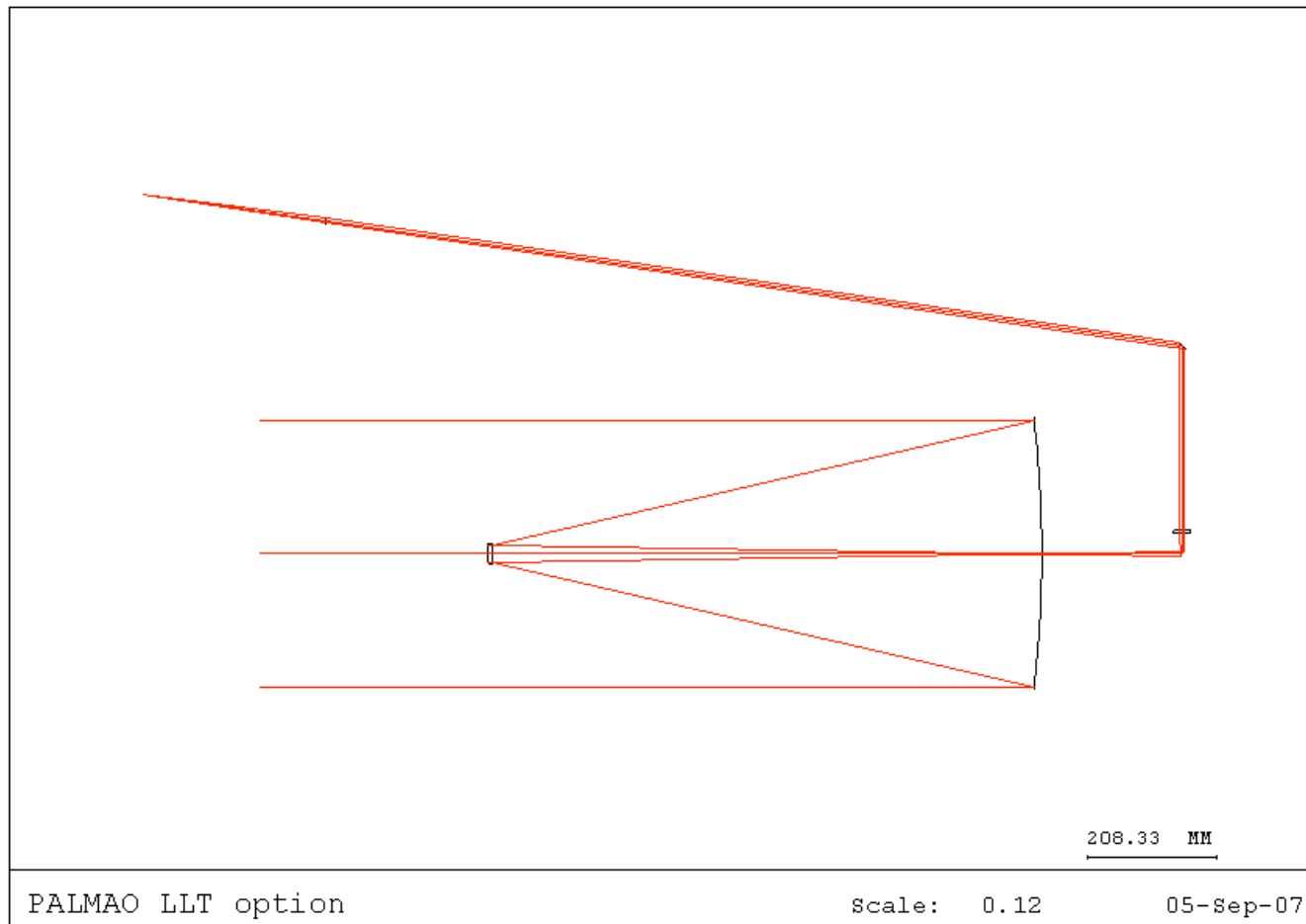


# Tolerance of LLT (*Code V*)

- Mainly using Code V TOR functions for both RSM wavefront & Zernike aberrations
- TOR performs all perturbations approximately equally





# Tolerance of LLT: Results

- Two different types of tolerance were done with different performance metrics: 1) RMS wavefront error and 2) SA, Coma & Astig using Zernike polynomials assuming that all the wavefront errors can be represented by wavefront errors in exit pupil
- Perturbations including 2mm longitudinal/lateral movement of lens; 20 um longitudinal movement of PM; , 100um lateral movement of SM and angular perturbations of all elements has but a small effect on RMS wavefront error ( $0.1385\lambda$ )-slide4)/SA ( $0.0002\lambda$ ) all of which can be compensated by defocus of SM
- Largest effects of perturbations are on Coma-including trefoil( $0.1704\lambda$  )-(slide5)
- Effects of perturbations on SA & Astigmatism are small/non-existent
- Monte Carlo (random perturbations) tolerance yielded similar results for Geometric Spot Size diameter (want to redo for RMS /Zernike –need to finish write macro for this)

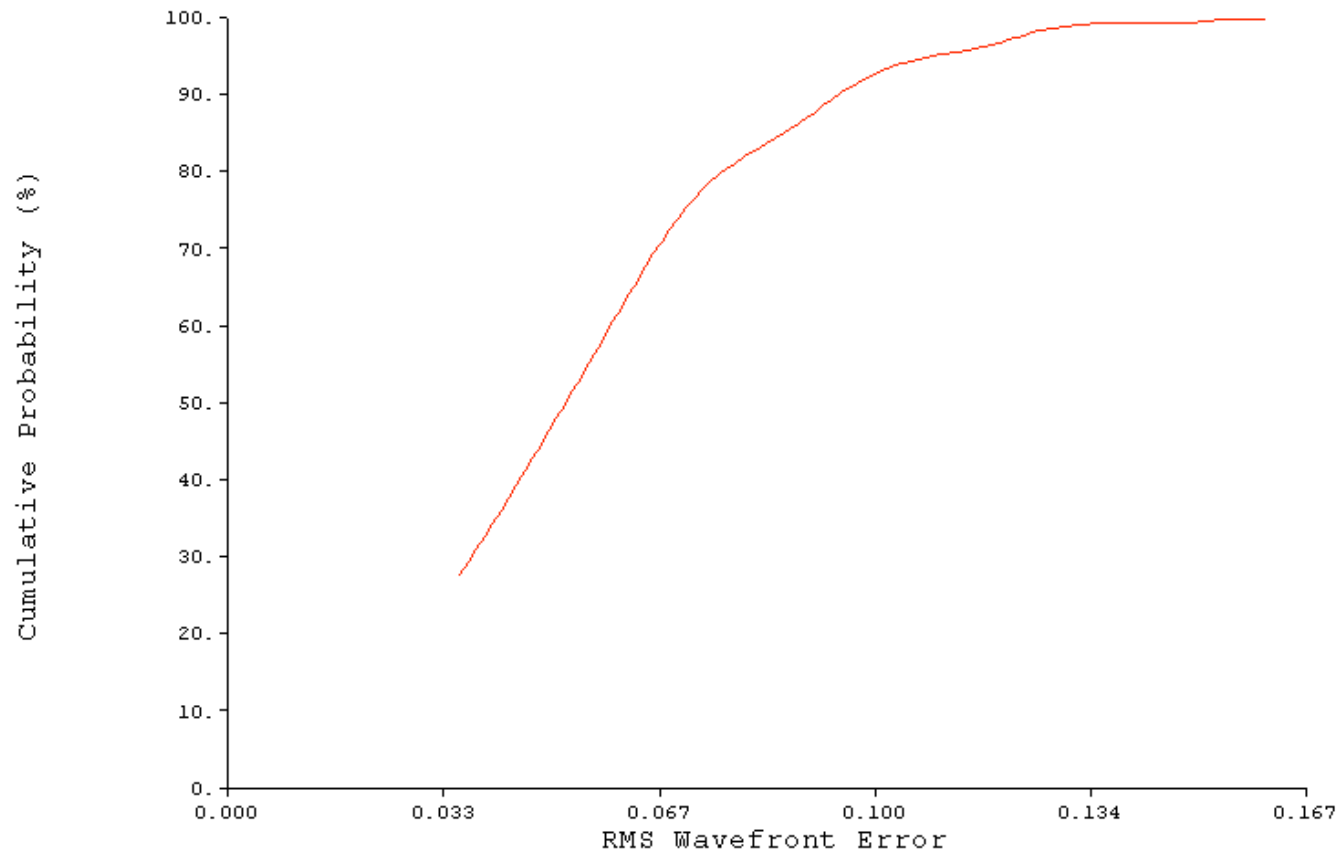


PALMAO LLT option  
Tolerance Analysis

F1:



07-Sep-07



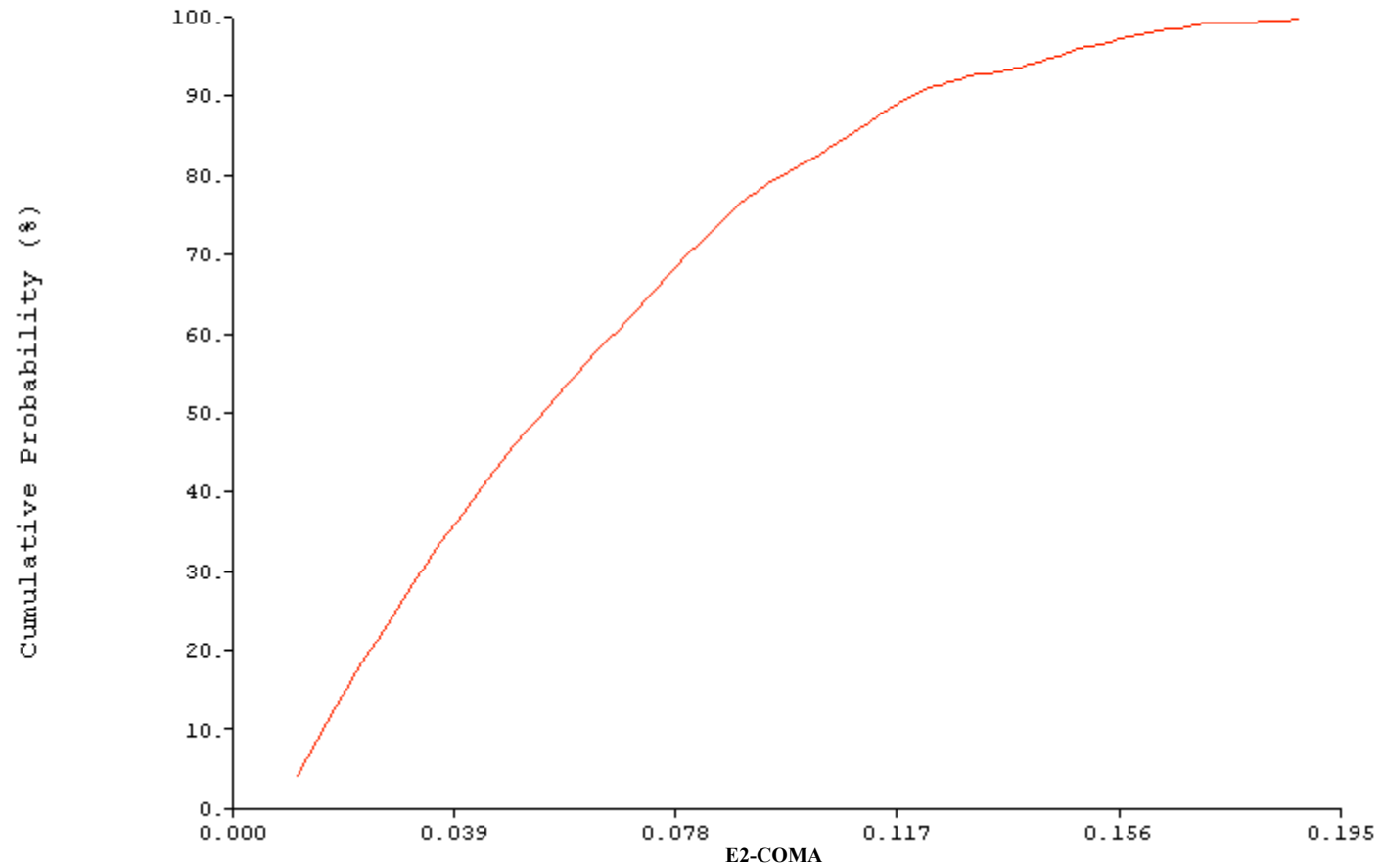


PALMAO LLT option  
Tolerance Analysis

F1:



07-Sep-07





# Next Steps

- Make larger perturbations (including perturbation of conic constant of PM)
- Redo Monte Carlo simulation for RMS wavefront /Zernike errors in XP