Rotator Angle $=0$ degrees $\leftrightarrow \quad$ spider opens downward, to -y , on image.
increasing rotator angle $\leftrightarrow \quad$ image (field \& pupil) rotate counter-clockwise
decreasing rotator angle $\quad \leftrightarrow \quad$ image (field \& pupil) rotate clockwise
$+\mathrm{Z7}$ commands a +Y move of the mirror (+Z7 used to also command RX tilt, but as of June 06 , it only commands a translation)
+Z 8 commands a +X move of the mirror ( $+\mathrm{Z8}$ used to also command RY tilt, but as of June 06 , it only commands a translation)

extra-focal image
Z7 too -ve
needs positive Z7

extra-focal image
Z5 too -ve needs positive Z5

extra-focal image
Z8 too +ve
needs negative Z 8

extra-focal image
Z6 too +ve
needs negative Z6


COMA

ASTIGMATISM

## SPHERICAL

