

1. Calibration matrix (jupyter notebook will be attached)
(screenshot 2023-06-27 at 12:52:53 will be attached)

① we move I_x and we know how much we get on D_{IX} and D_{EX}

② it's a matrix from I_x to demod. as following
(we make the sequence of vector element the same as what is written in /virgoData/VirgoOnline/AFC-GR-drift_ctrl.cfg)

$$\begin{pmatrix} D_{IX} \\ D_{EX} \\ D_{IY} \\ D_{EY} \end{pmatrix} = \begin{pmatrix} ix_dix & ex_dix & 0 & 0 \\ ix_dex & ex_dex & 0 & 0 \\ 0 & 0 & iy_diy & ey_diy \\ 0 & 0 & iy_dey & ey_dey \end{pmatrix} \begin{pmatrix} I_x \\ E_x \\ I_y \\ E_y \end{pmatrix}$$

③ we invert the above 4x4 matrix and update it on vpm

④ We expect "Green Drift Control" input signal to be calibrated in terms of mirror tilt [unit is μrad]. ⑤ vpm is updated

2. Acting matrix

① we move M5 and M7 $\rightarrow$ AA makes mirror to tilt $\rightarrow$ drift demod changes $\rightarrow$ and we check how much we get on drift_dem

since this matrix is affected by the above calibration matrix, we will need to test it after updating the calibration matrix

note:

we want

GR_M5/7_BPC2_X/Y

represents how much we need to move M5/M7