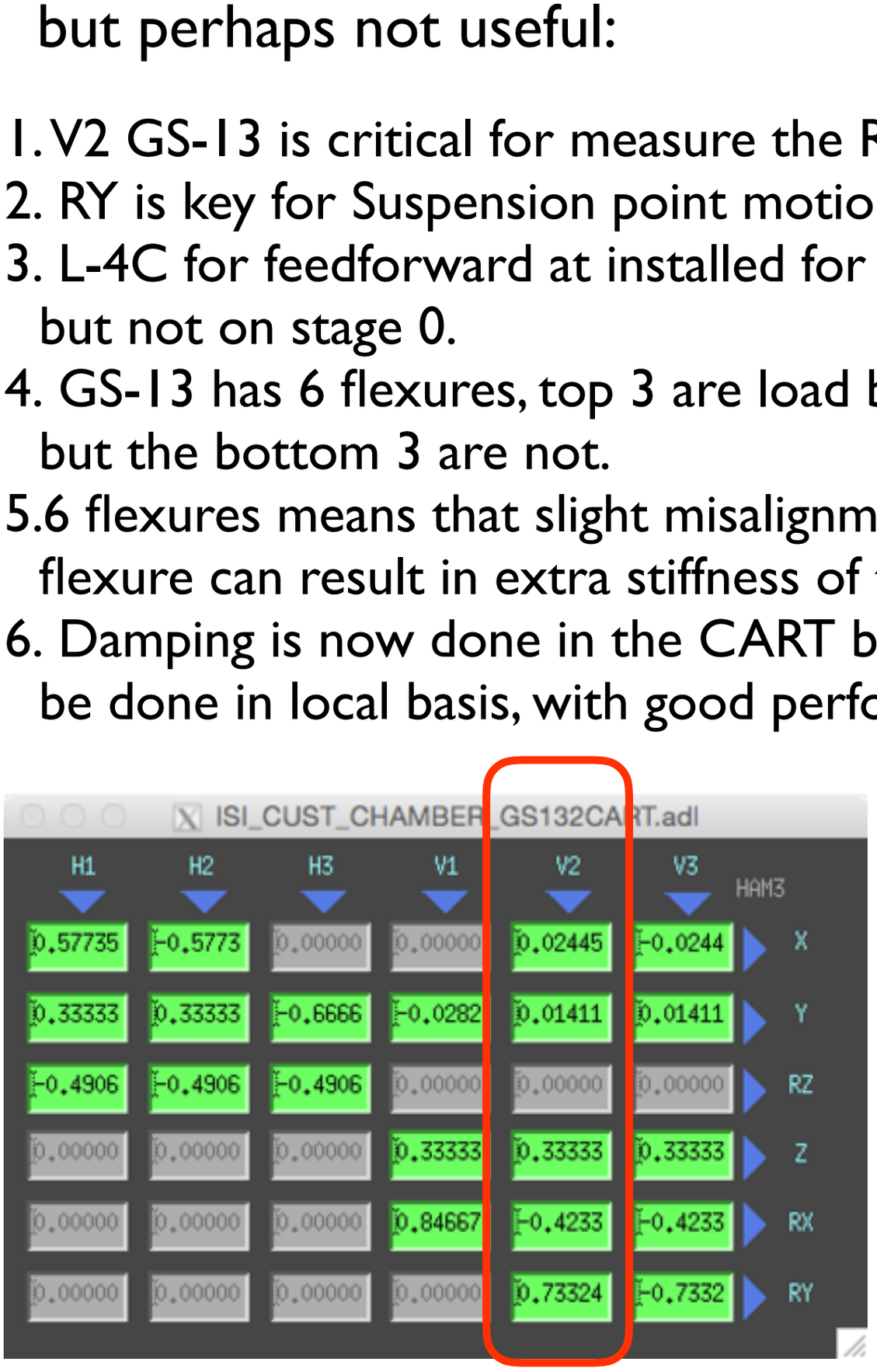
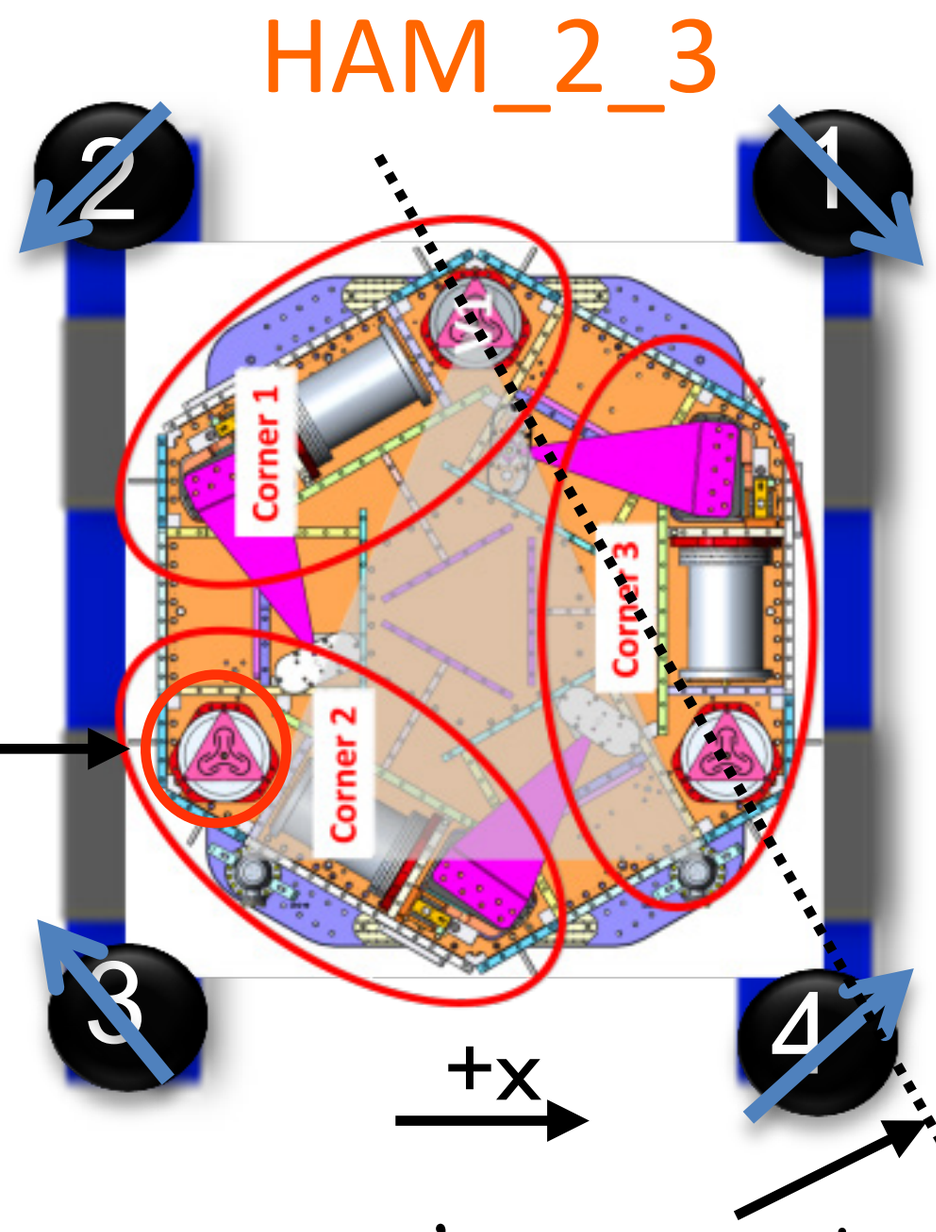
Here follows a list of things which are true, but perhaps not useful:

1. V2 GS-13 is critical for measure the RY tilt motion
2. RY is key for Suspension point motion control
3. L-4C for feedforward at installed for HEPI, but not on stage 0.
4. GS-13 has 6 flexures, top 3 are load bearing, but the bottom 3 are not.
5. 6 flexures means that slight misalignments of a flexure can result in extra stiffness of the mass.
6. Damping is now done in the CART basis, but could be done in local basis, with good performance.



from T1000388



can't sense rotation about this axis if V2 is broken

HAM_2_3: GS132CART =

X		0.5773	-0.5773	0	0	0.0244	-0.0244	H1
Y		0.3333	0.3333	-0.6667	-0.0282	0.0141	0.0141	H2
rZ	=	-0.4906	-0.4906	-0.4906	0	0	0	H3
Z		0	0	0	0.3333	0.3333	0.3333	V1
rX		0	0	0	0.8467	-0.4233	-0.4233	V2
rY		0	0	0	0	0.7332	-0.7332	V3

cart2GS13 =

H1		0.8660	0.5000	-0.6794	0.0000	0.0167	-0.0289	X
H2		-0.8660	0.5000	-0.6794	0.0000	0.0167	0.0289	Y
H3	=	0.0000	-1.0000	-0.6794	0.0000	-0.0333	-0.0000	rZ
V1		0	0	0	1.0000	0.7874	0.0000	Z
V2		0	0	0	1.0000	-0.3937	0.6819	rX
V3		0	0	0	1.0000	-0.3937	-0.6819	rY

But if V2 is dead, Try this matrix instead

X		0.5768	-0.5771	0.0003	0.0073	0	-0.0171	H1
Y		0.3330	0.3335	-0.6665	-0.0240	0	0.0183	H2
rZ	=	-0.4906	-0.4906	-0.4906	0	0	0	H3
Z		-0.0076	0.0038	0.0038	0.4330	0	0.4330	V1
rX		0.0096	-0.0048	-0.0048	0.7201	0	-0.5499	V2
rY		-0.0166	0.0083	0.0083	0.2192	0	-0.5141	V3

generates signals for all DOFS from 5 sensors

Result * cart2GS13 =

X		0.9993	-0.0004	0.0000	-0.0098	0.0125	-0.0216	X
Y		-0.0004	0.9998	-0.0000	-0.0057	0.0072	-0.0125	Y
rZ	=	-0.0000	0.0000	1.0000	-0.0000	0.0000	0.0000	rZ
Z		-0.0098	-0.0057	-0.0000	0.8659	0.1703	-0.2949	Z
rX		0.0125	0.0072	-0.0000	0.1703	0.7838	0.3745	rX
rY		-0.0216	-0.0125	0.0000	-0.2949	0.3745	0.3513	rY

but they stink (this should be the identity matrix)

What happens to the ability to measure the cartesian motion when you are missing the V2 sensor? - It's bad.

sensed motion

$$\begin{bmatrix} X \\ Y \\ rZ \\ Z \\ rX \\ rY \end{bmatrix} =$$

```
This is the projection of real CART motion to sensed CART motion
Using the current matrix with a dead V2 sensor
Result * cart2GS13 =
    1.0000         0         0   -0.0240    0.0100   -0.0170
         0    1.0000         0   -0.0140    0.0060   -0.0100
         0         0    1.0000         0         0         0
         0         0         0    0.6670    0.1310   -0.2270
         0         0         0    0.4230    0.8330    0.2890
         0         0         0   -0.7330    0.2890    0.5000
```

$$\times \begin{bmatrix} X \\ Y \\ rZ \\ Z \\ rX \\ rY \end{bmatrix}$$

real motion

this is bad

```
This is the projection of real CART motion to sensed CART motion
Using the pseudo-inverse of the sensing matrix with a dead V2
   (rounded to 3 sig figs)
Result * cart2GS13 =
    0.9990         0         0   -0.0100    0.0120   -0.0220
         0    1.0000         0   -0.0060    0.0070   -0.0120
         0         0    1.0000         0         0         0
   -0.0100   -0.0060         0    0.8660    0.1700   -0.2950
    0.0120    0.0070         0    0.1700    0.7840    0.3750
   -0.0220   -0.0120         0   -0.2950    0.3750    0.3510
```

this is still bad