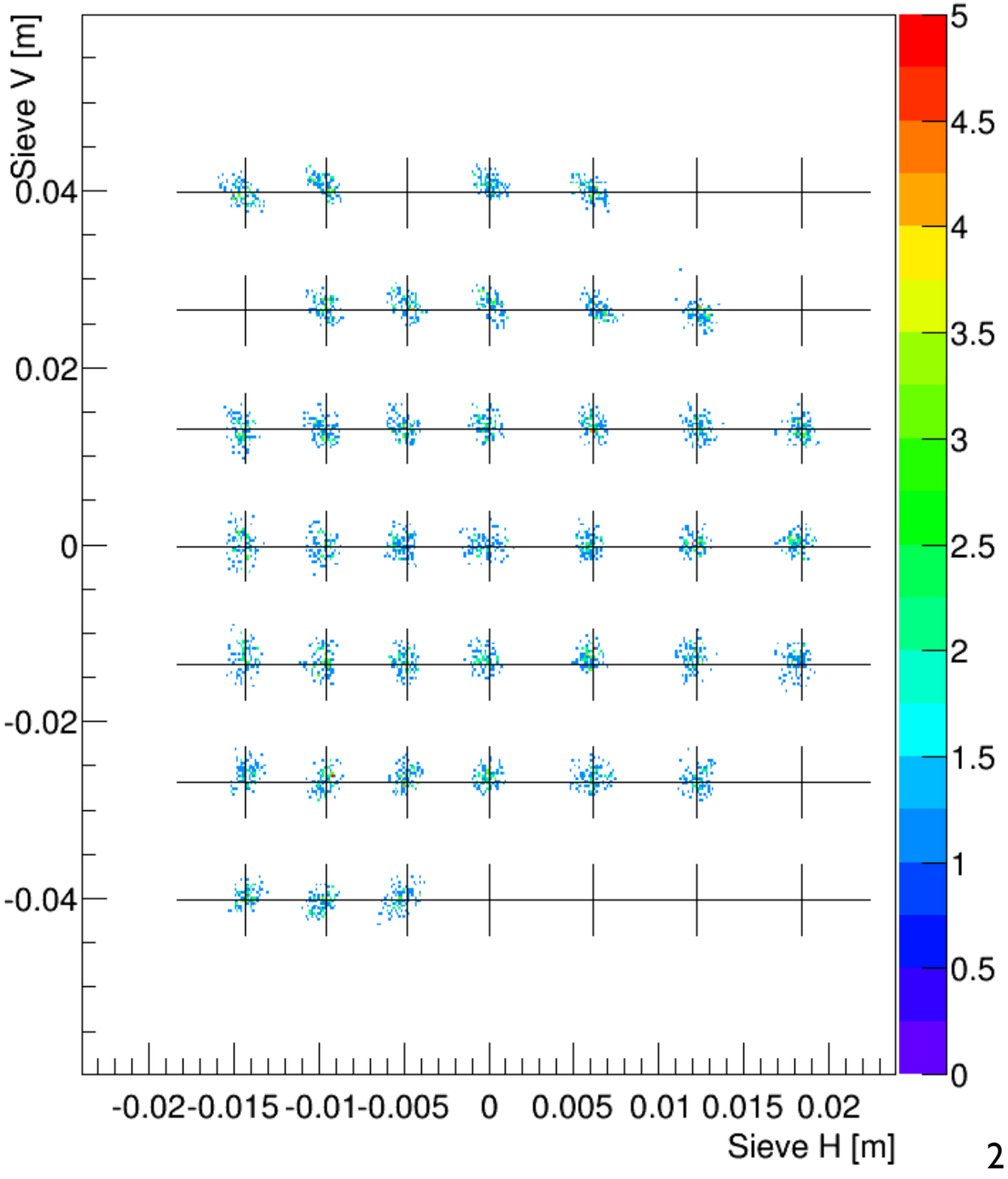
Optics Status Update

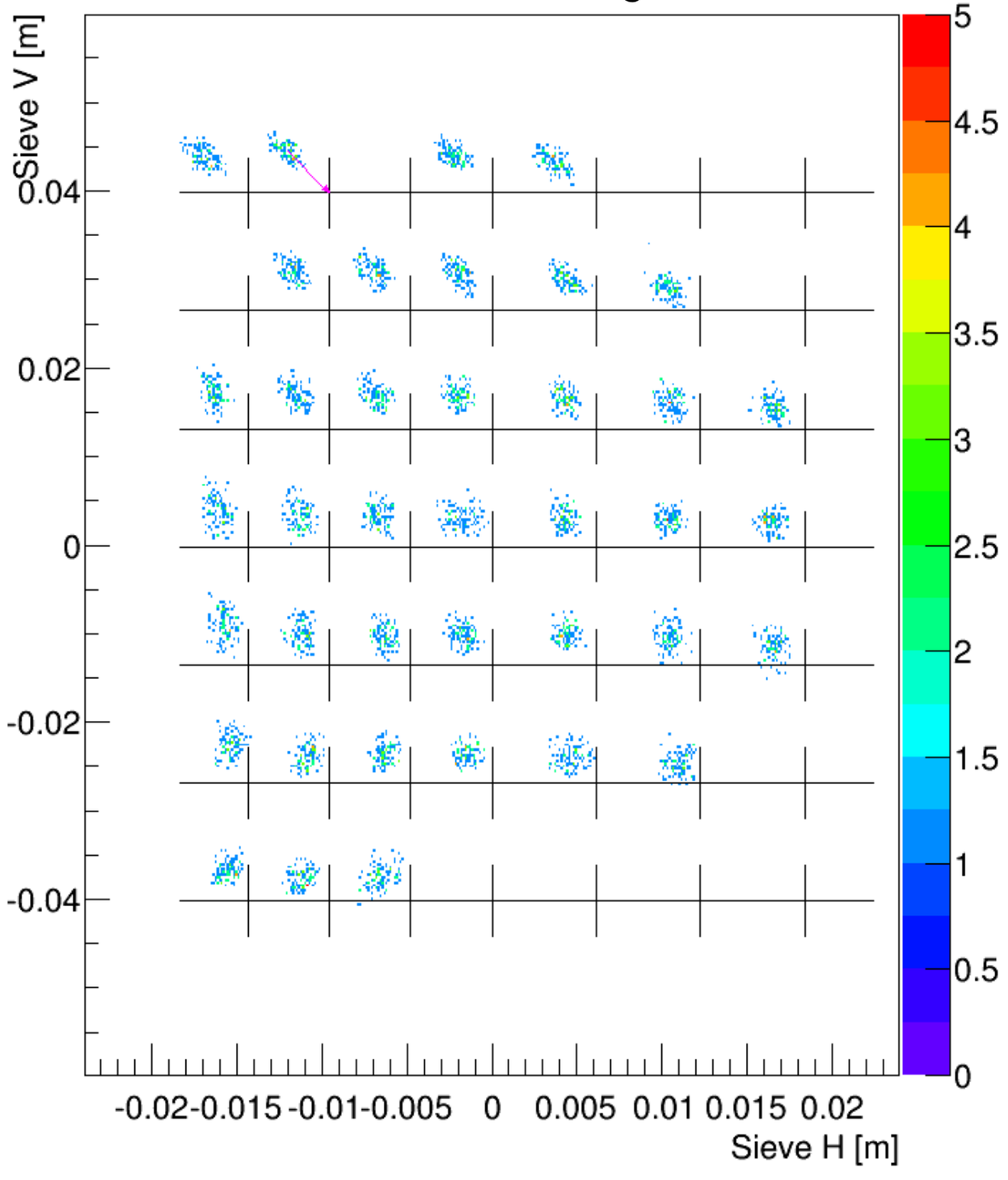
Chao Gu

Offset Problem

2.254GeV 5.0T 0deg matrix
same data



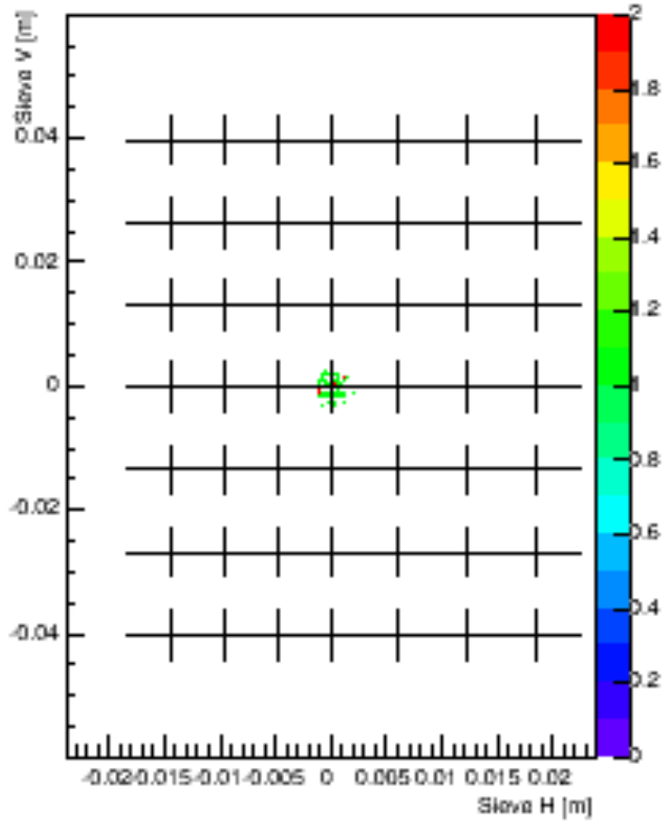
2.254GeV 5.0T 0deg matrix
1.706GeV 2.5T 90deg data



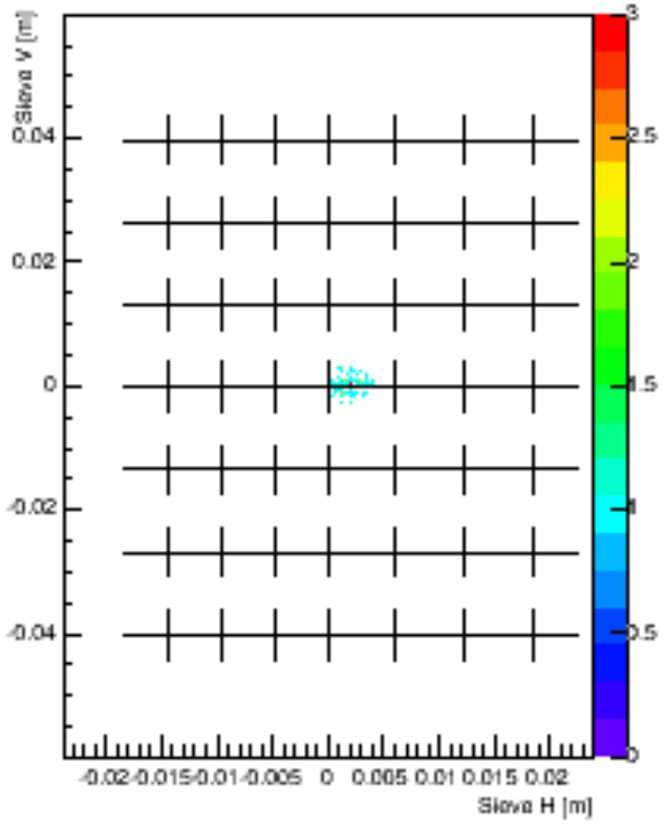
Optics Status Update

- Treat matrix elements separately:
  - Use center hole to decide offset and two first order matrix elements
  - Use the beam position scan data to decide the matrix elements which do not relate to x_{fp}
  - Use the delta scan data to decide the matrix elements related to x_{fp}

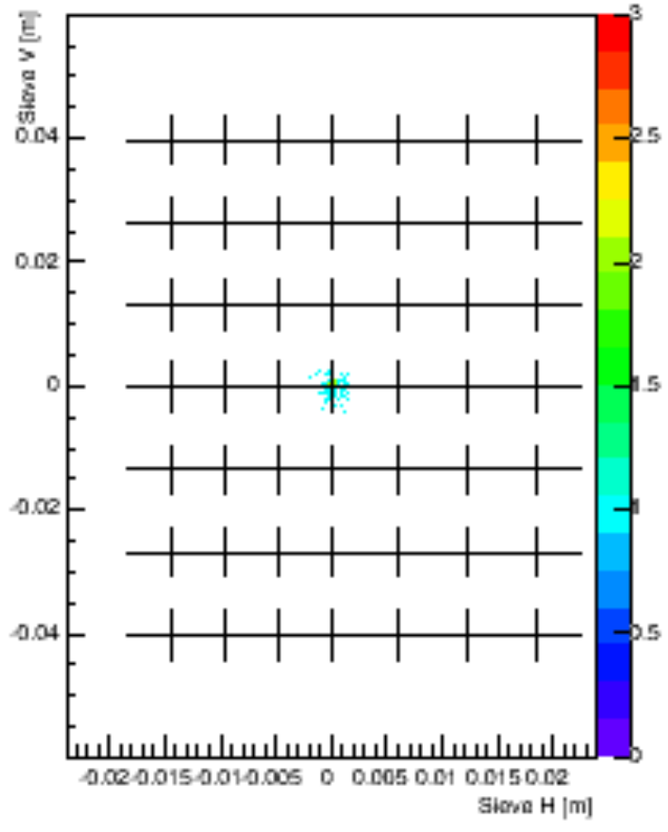
-3%, y_{tg}=0.4mm



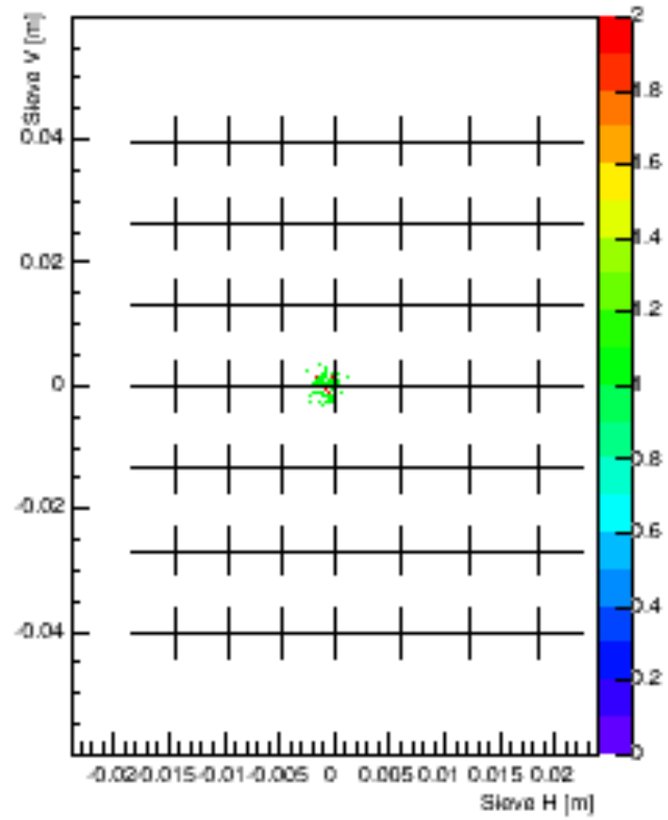
-1%, y_{tg}=3.7mm



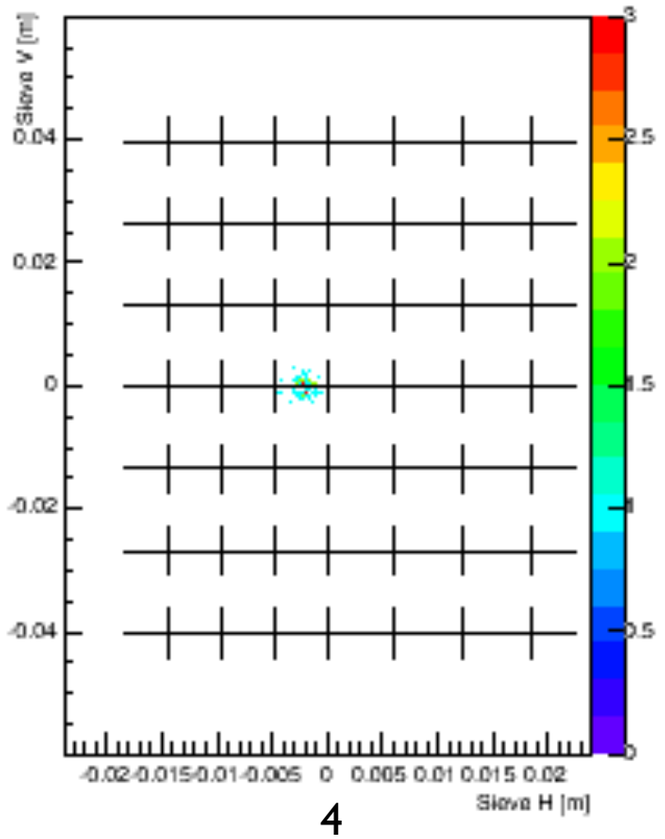
0%, y_{tg}=2.0mm



1%, y_{tg}=1.5mm

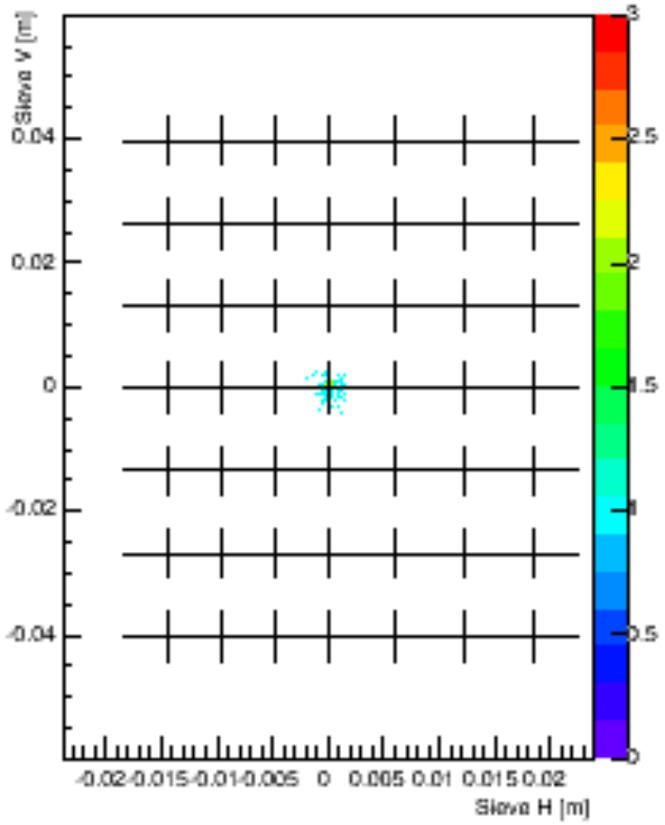


3%, y_{tg}=0.9mm

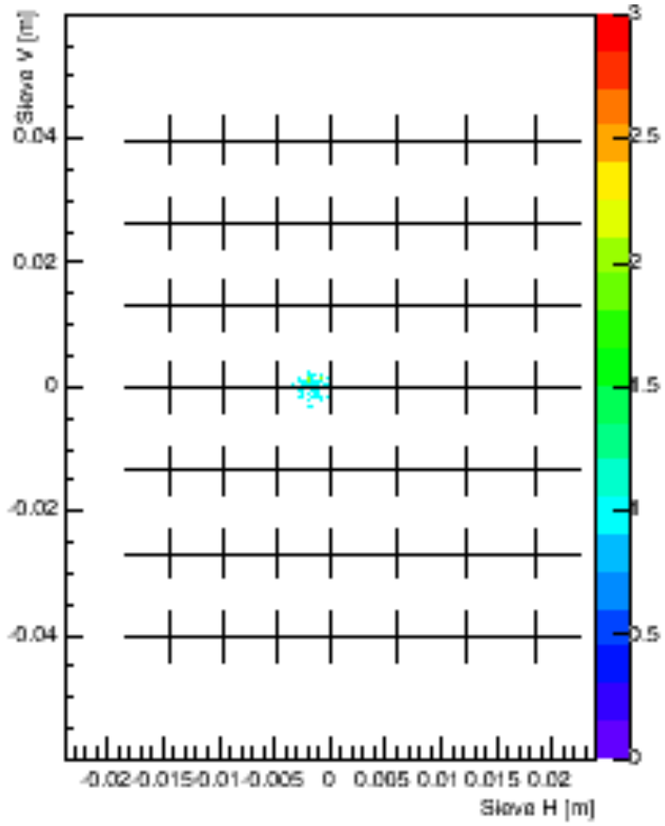


Center hole

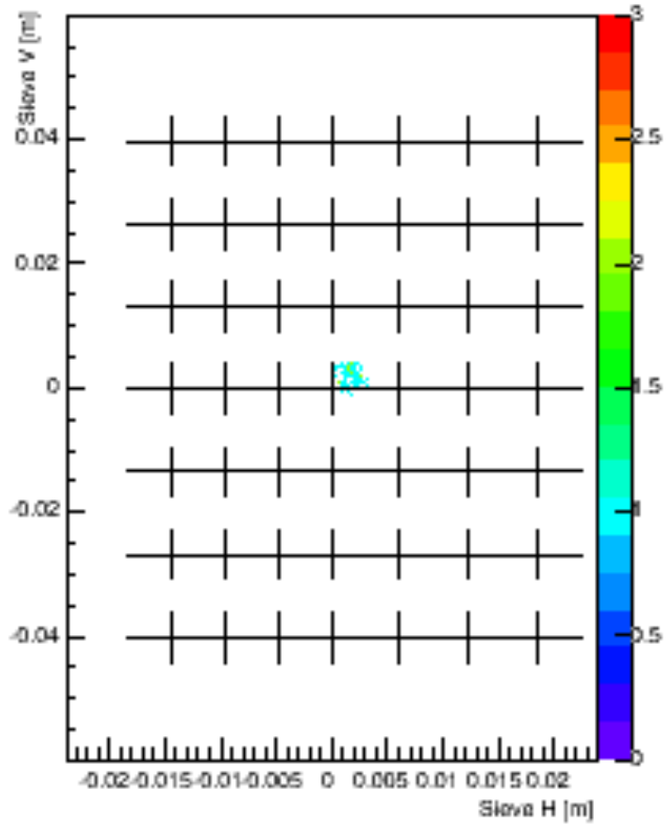
0%, y_{tg}=2.0mm



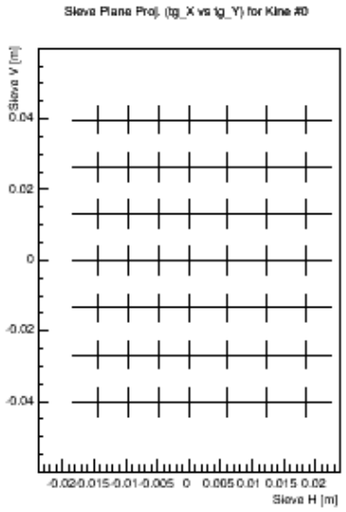
0%, y_{tg}=-1.9mm

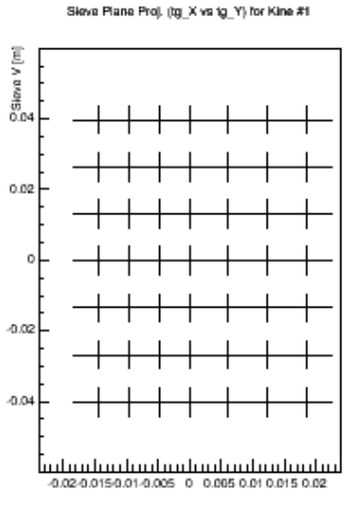


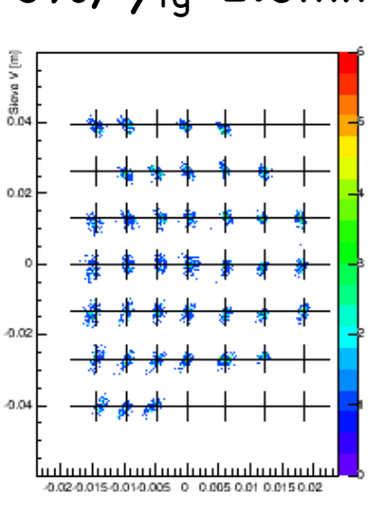
0%, y_{tg}=5.7mm

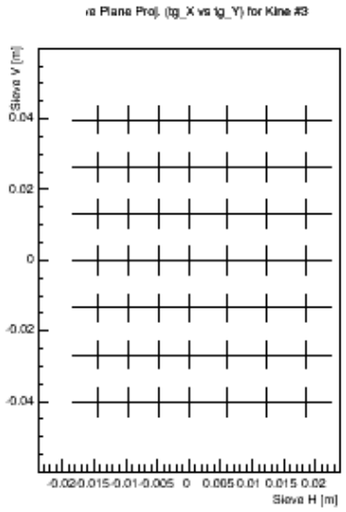


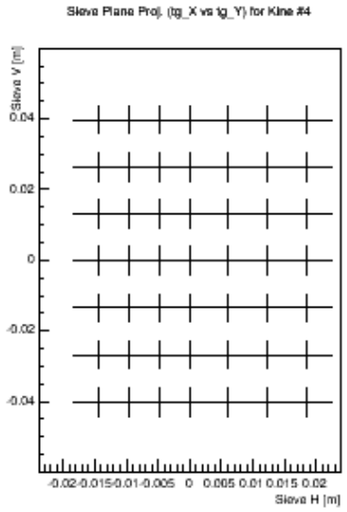
0%, y_{tg}=2.0mm

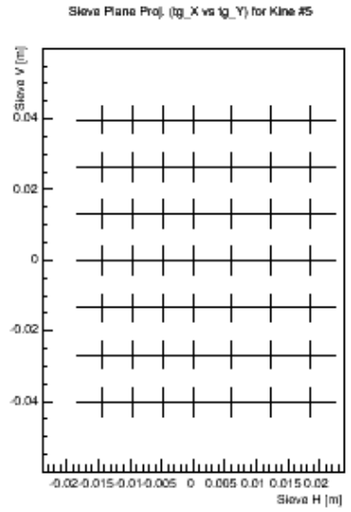




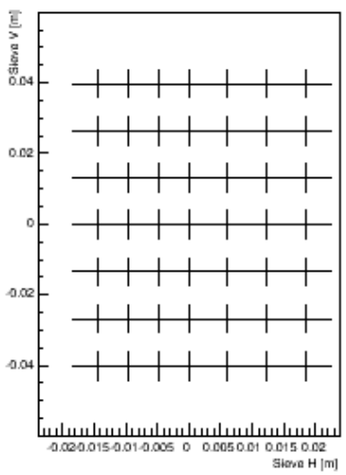


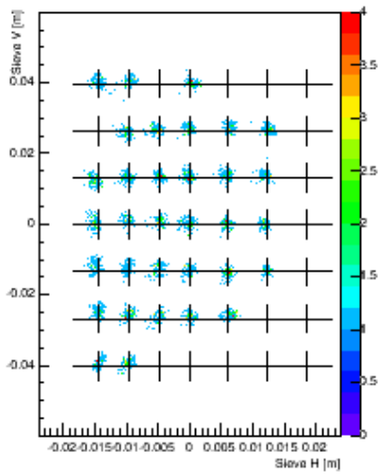




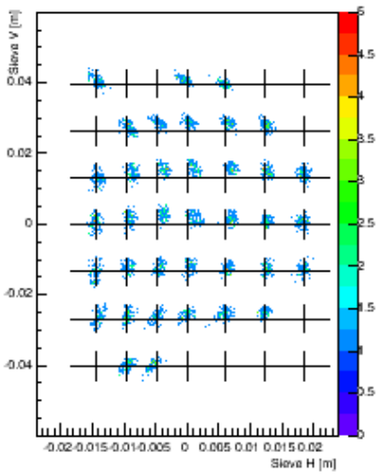


0%, y_{tg}=-1.9mm



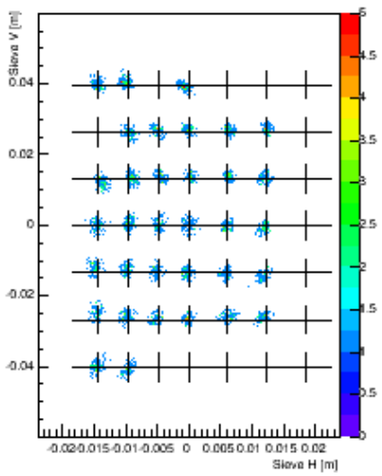


0%, y_{tg}=5.7mm

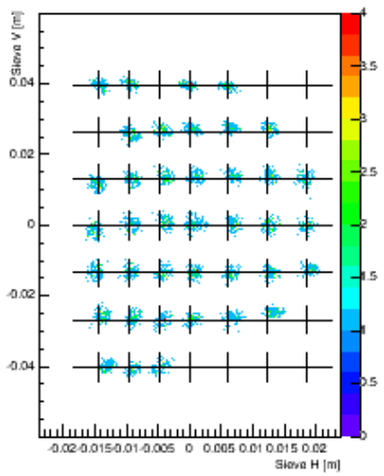


After Calibration

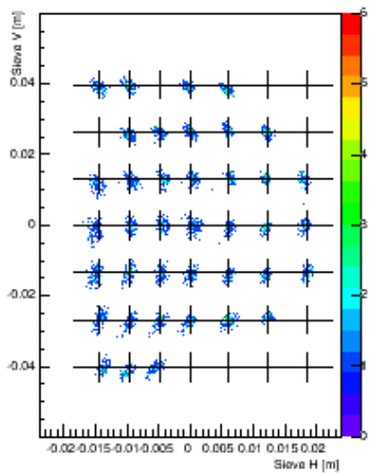
-3%



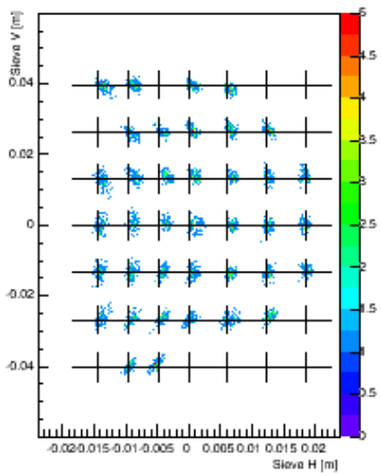
-1%



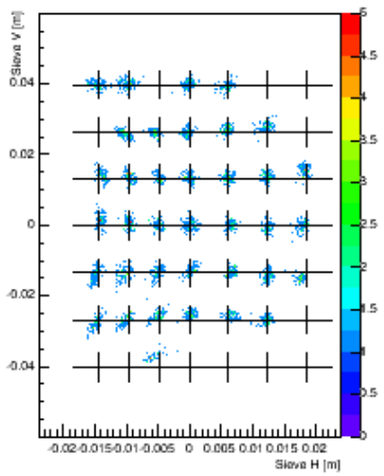
0%

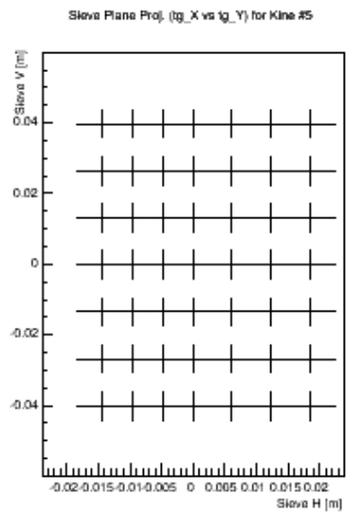


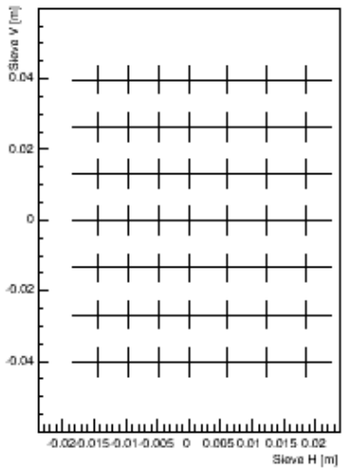
1%

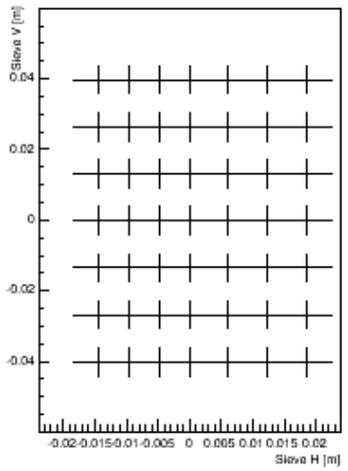


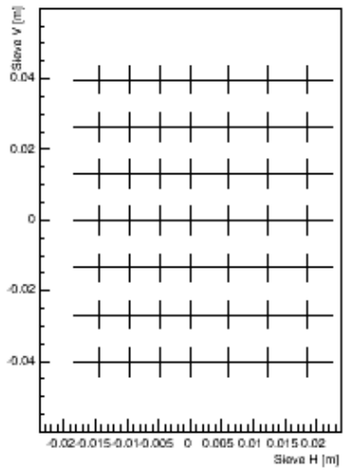
3%











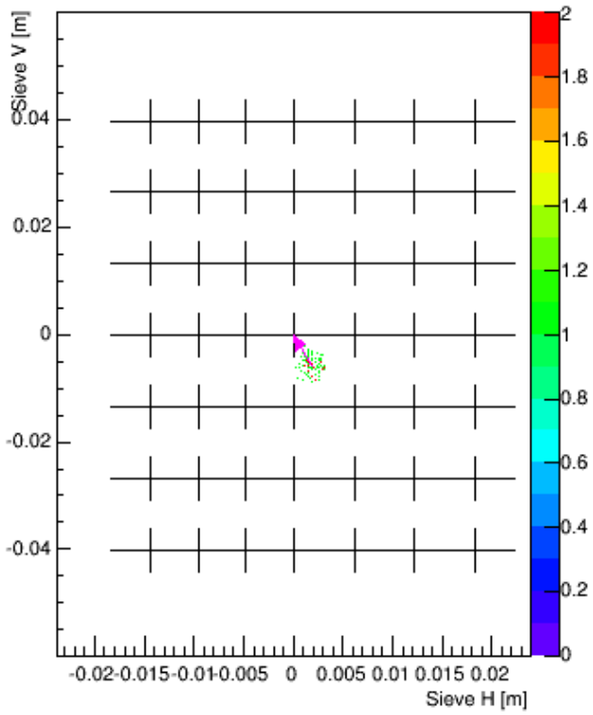
After Calibration

First Order Matrix

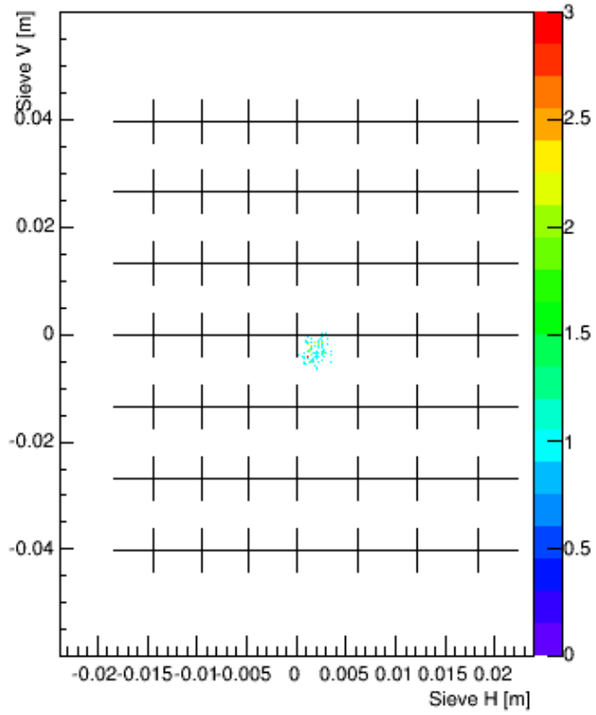
$$\theta_{tg} = T_{0000} + T_{1000}\, x + T_{0100}\, \theta + T_{0010}\, y + T_{0001}\, \varphi$$
$$\varphi_{tg} = P_{0000} + P_{1000}\, x + P_{0100}\, \theta + P_{0010}\, y + P_{0001}\, \varphi$$

	T0000	T1000	T0100	T0010	T0001
Old	8.050E-03	2.187E-02	-2.745E+00	-4.294E-02	3.162E-01
New	7.440E-03	2.121E-02	-2.657E+00	1.422E-01	-6.496E-03
	P0000	P1000	P0100	P0010	P0001
Old	-4.839E-03	1.357E-02	1.878E-01	-7.044E-01	3.763E-01
New	-3.960E-03	1.608E-02	2.011E-01	-6.085E-01	2.090E-01

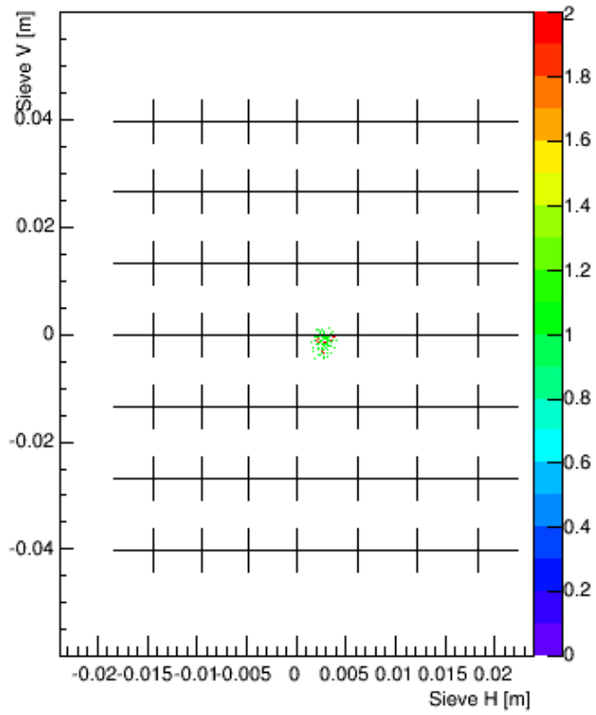
-3%



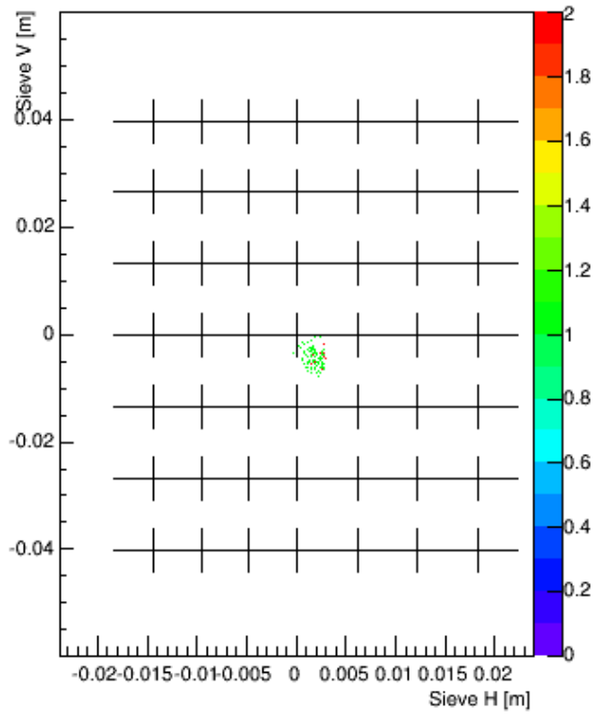
-2%



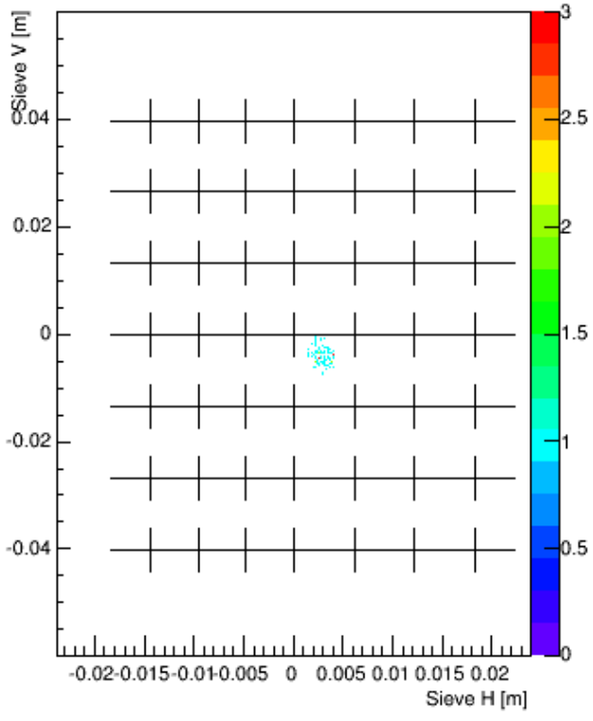
-1%



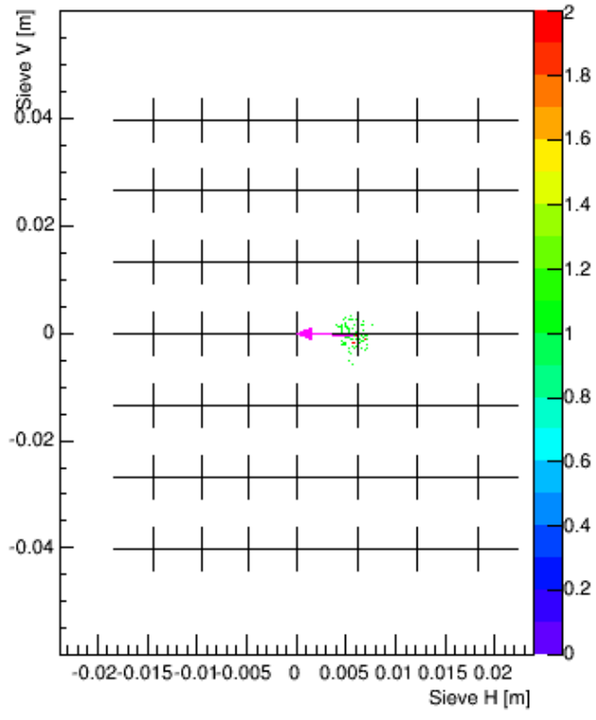
0%



1%



2%



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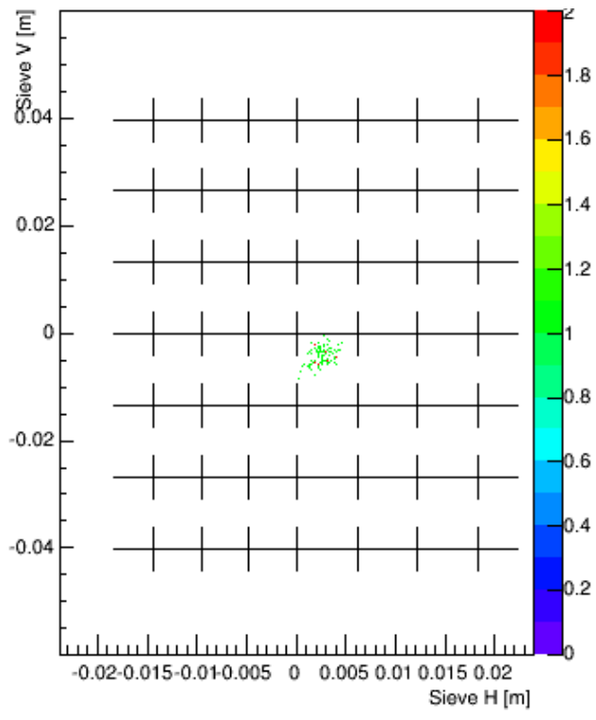

Use the matrix to replay 1.706GeV data
Still has a 3mm offset