

1. Without Phase Trombones

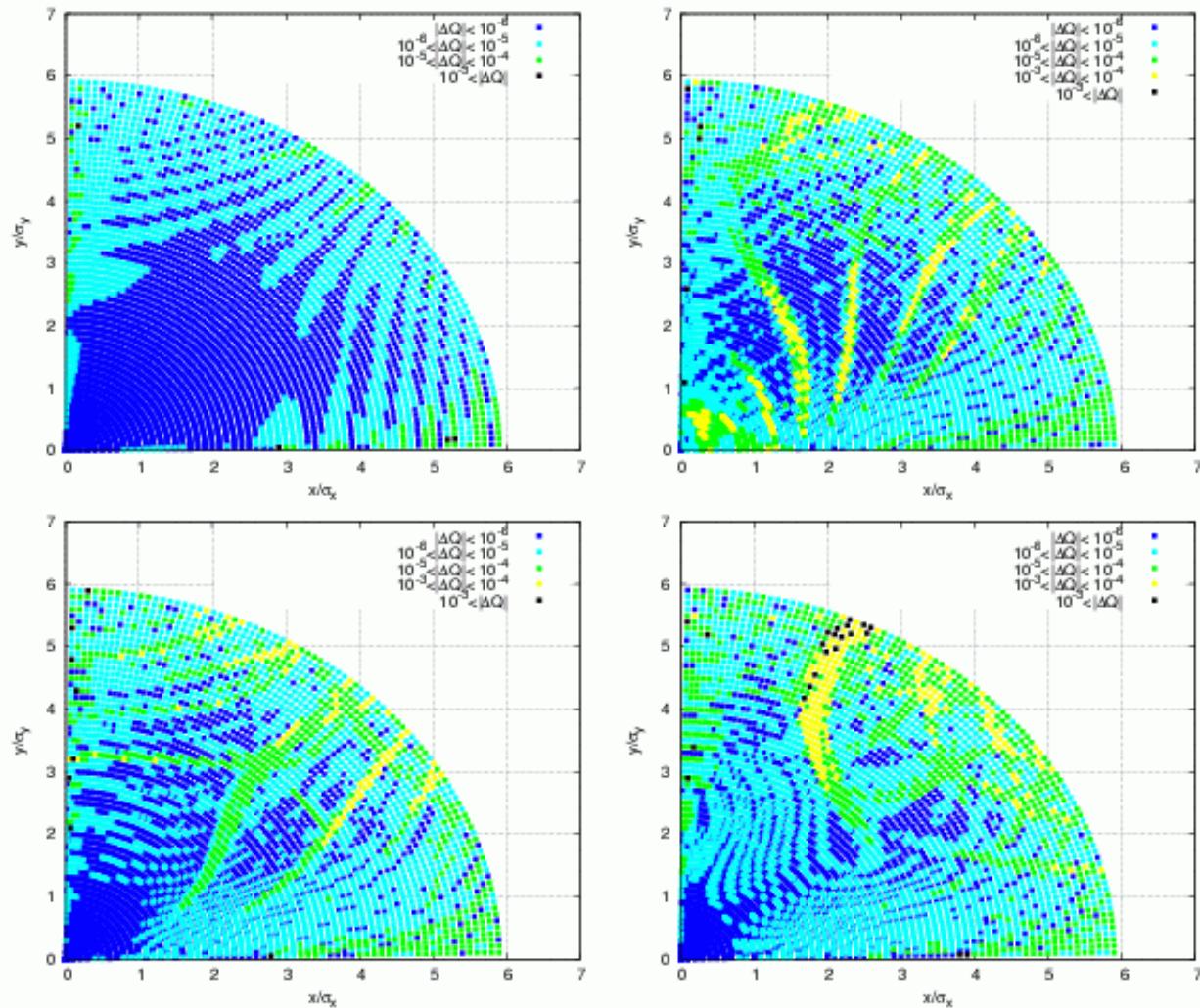


Figure 3: Tune diffusion maps of on-momentum particles for working point (28.685, 29.695): Top-left: without BB; Top-right: with BB; Bottom-left: with BB and half BB compensation; Bottom-right: with BB and full BB compensation.

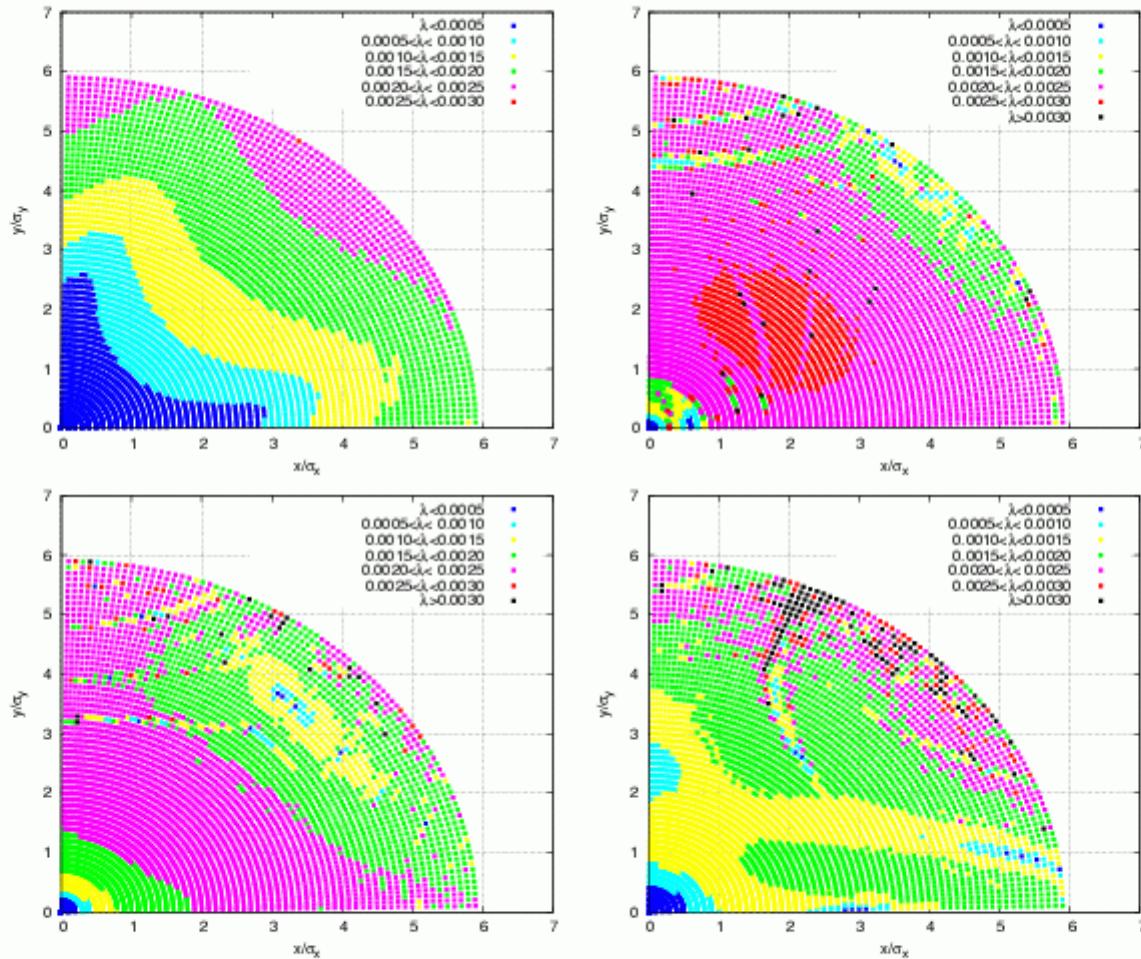
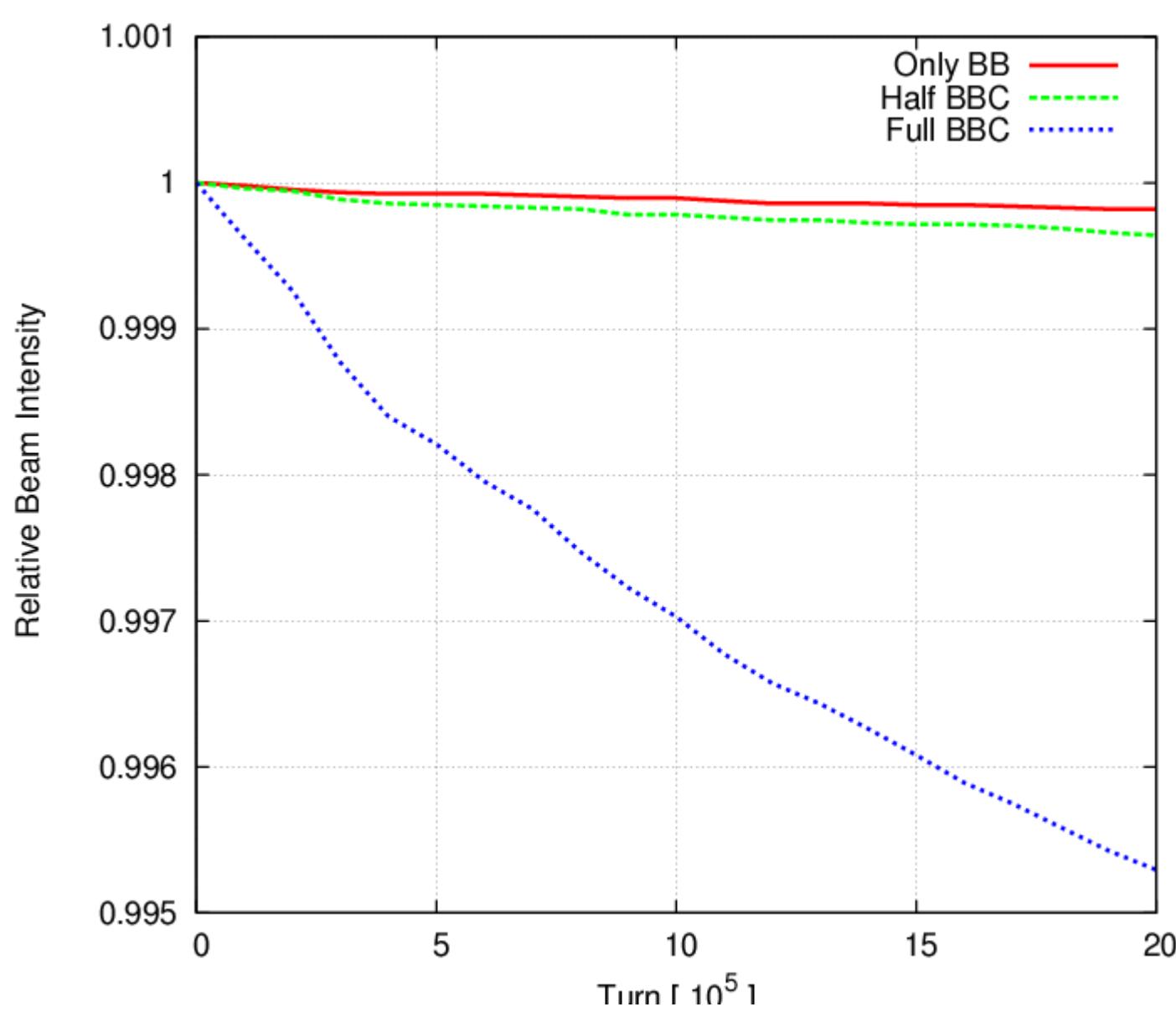


Figure 7: Lyapunov exponent maps of on-momentum particles for working point (28.685, 29.695): Top-left: without BB; Top-right: with BB; Bottom-left: with BB and half BB compensation; Bottom-right: with BB and full BB compensation.



2. After adding Phase Trombones

```
note - emacs@rat.pbn.bnl.gov
File Edit Options Buffers Tools Help
File New Open Save Close Find Replace Cut Copy Paste Undo Redo Help ?
1) with BB:
* NAME          S          BETX          AX          BETY          AY          MUX          MUY
"CLOCK6"        0          0.5187613667  -0.03188310215  0.5196453489  -0.01173642922  0          0
"CLOCK8"      639.445028  0.5187613667  0.03188310215  0.5196453488  0.01173642924  5.304811589  4.294930232
"CLOCK10"     1277.948394  10.71138784   0.04687100377  9.785402809   0.01613284454  9.517622644  9.779139376

The phase advances before IP8 and IP10:
horizontal: 4.212811055
vertical : 5.484209144

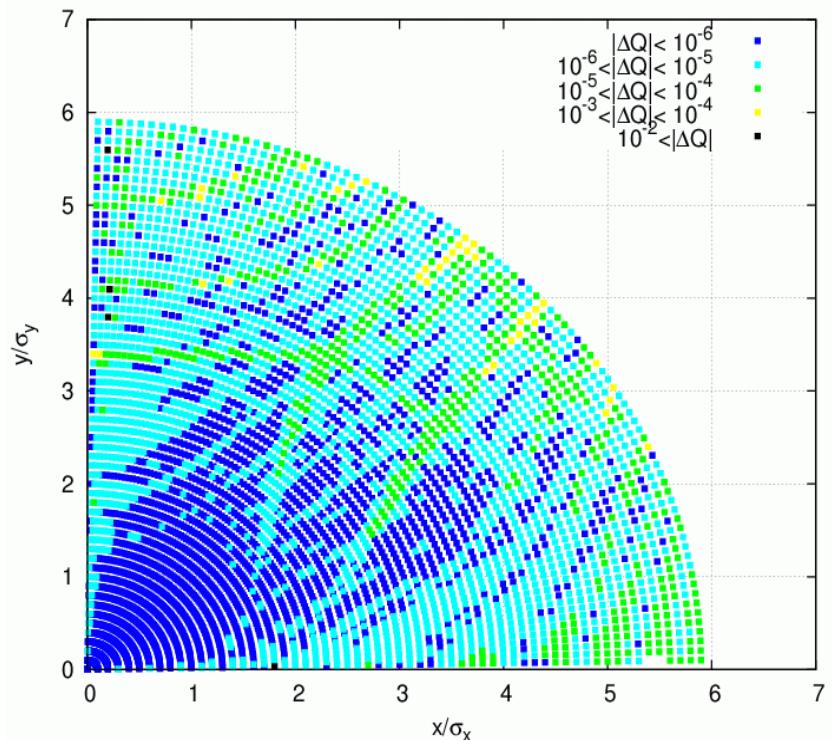
The matrix to be inserted:
before IP10:
horizontal dphi_x = 0.57437789 pi =103.3880202 degree
vertical   dphi_y = 0.031581712 pi = 5.68470816 degree

after IP10:
horizontal dphi_x = -0.515790856 pi = -92.84235408 degree
vertical   dphi_y = -0.031581712 pi = -5.68470816 degree

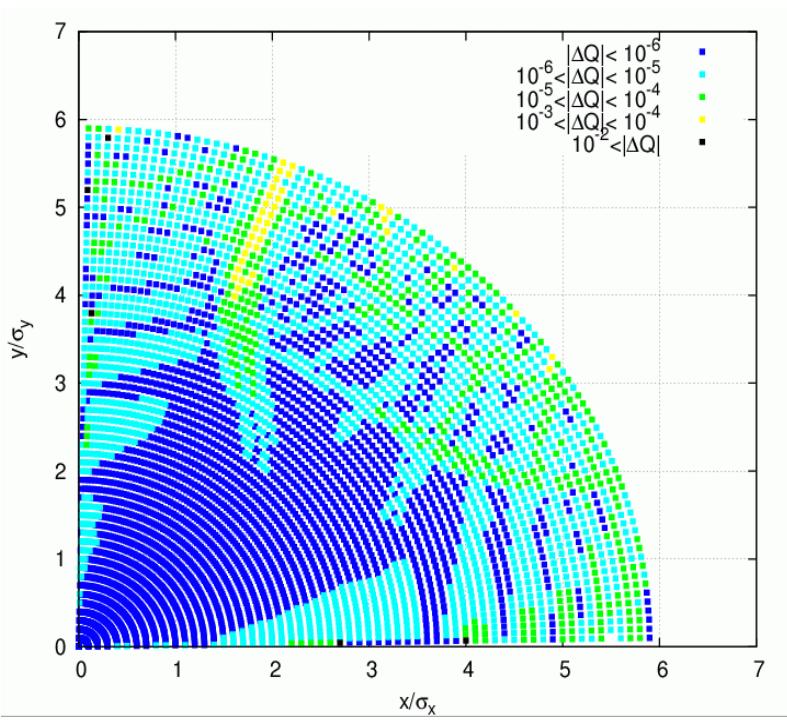
The matrix is:
-0.185947  10.4203
-0.091021  -0.277142
                  0.99668  0.969285
                  -0.0101253  0.993484

Another matrix is:
-0.277142  -10.4203
0.091021   -0.185947
                  0.993484  -0.969285
                  0.0101253  0.99668

----- note (Fundamental)--L23--All-----
```

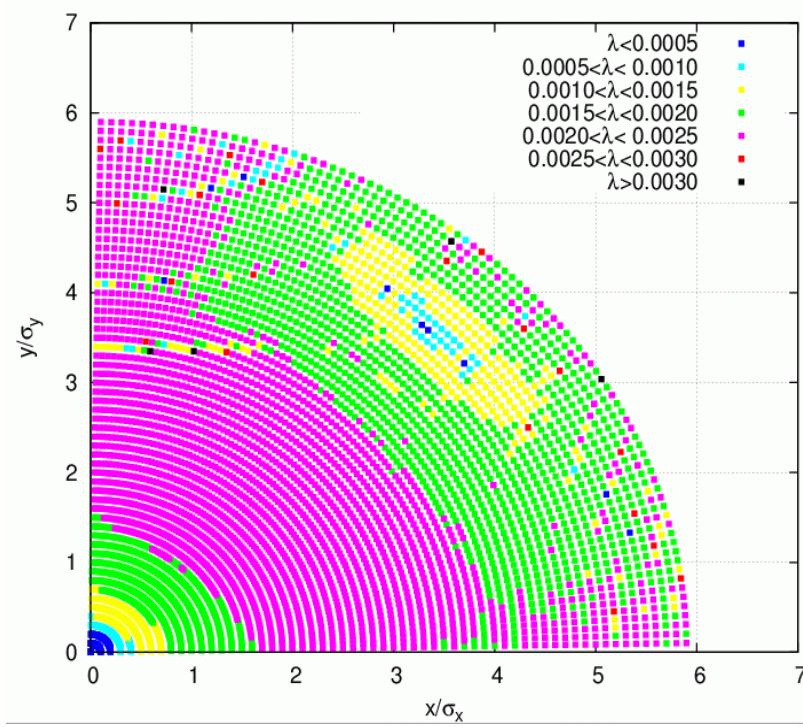


HBBC

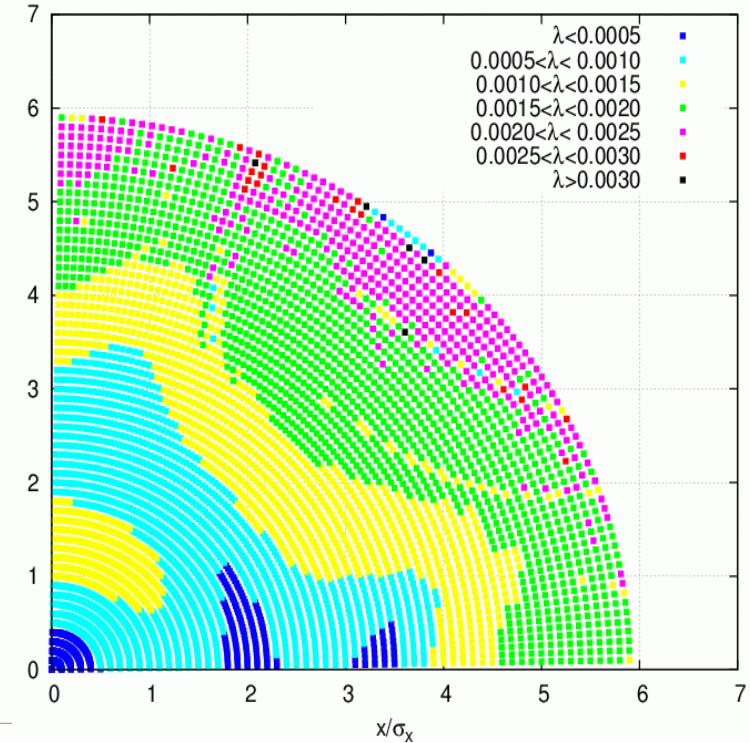


FBBC

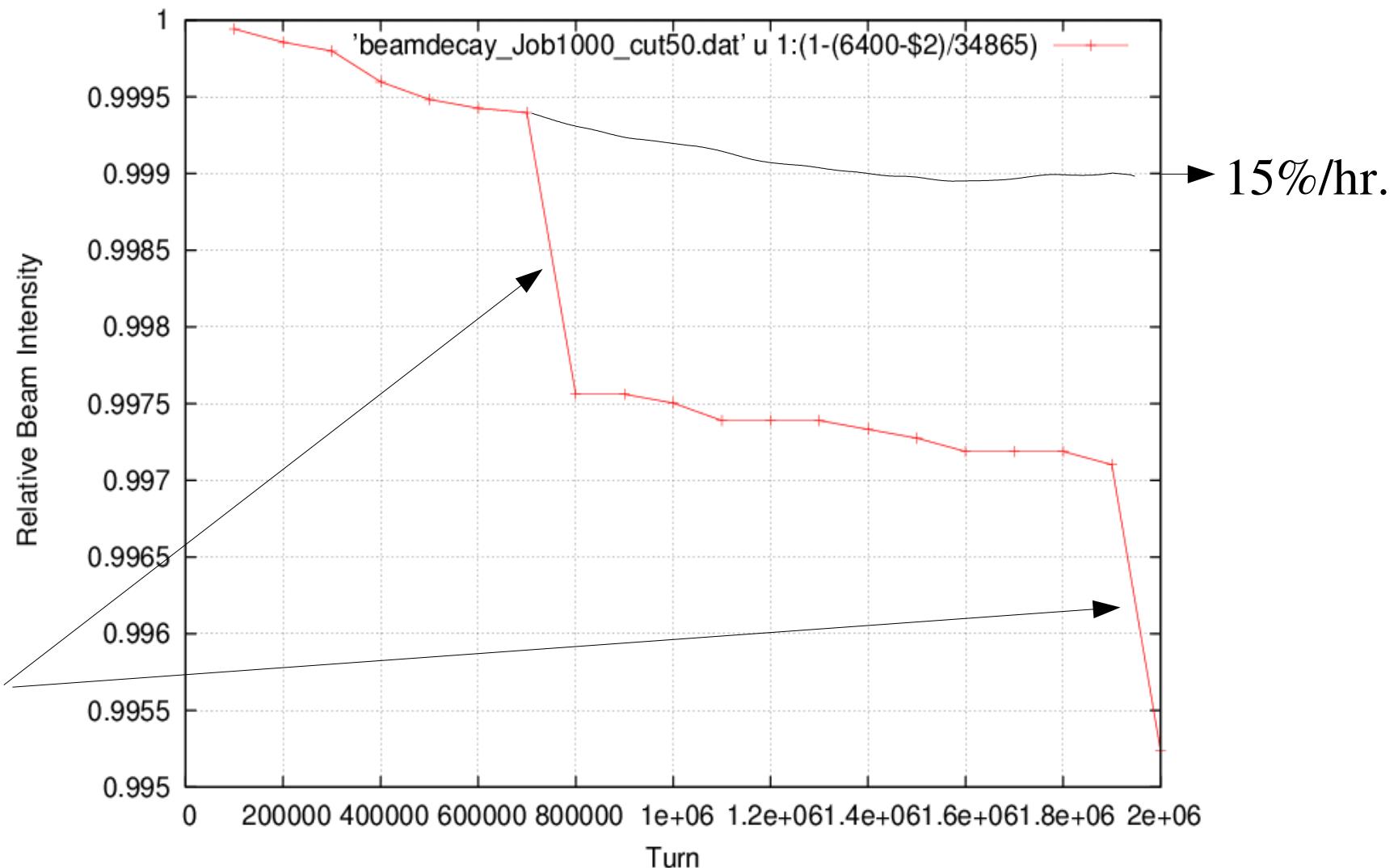
HBBC

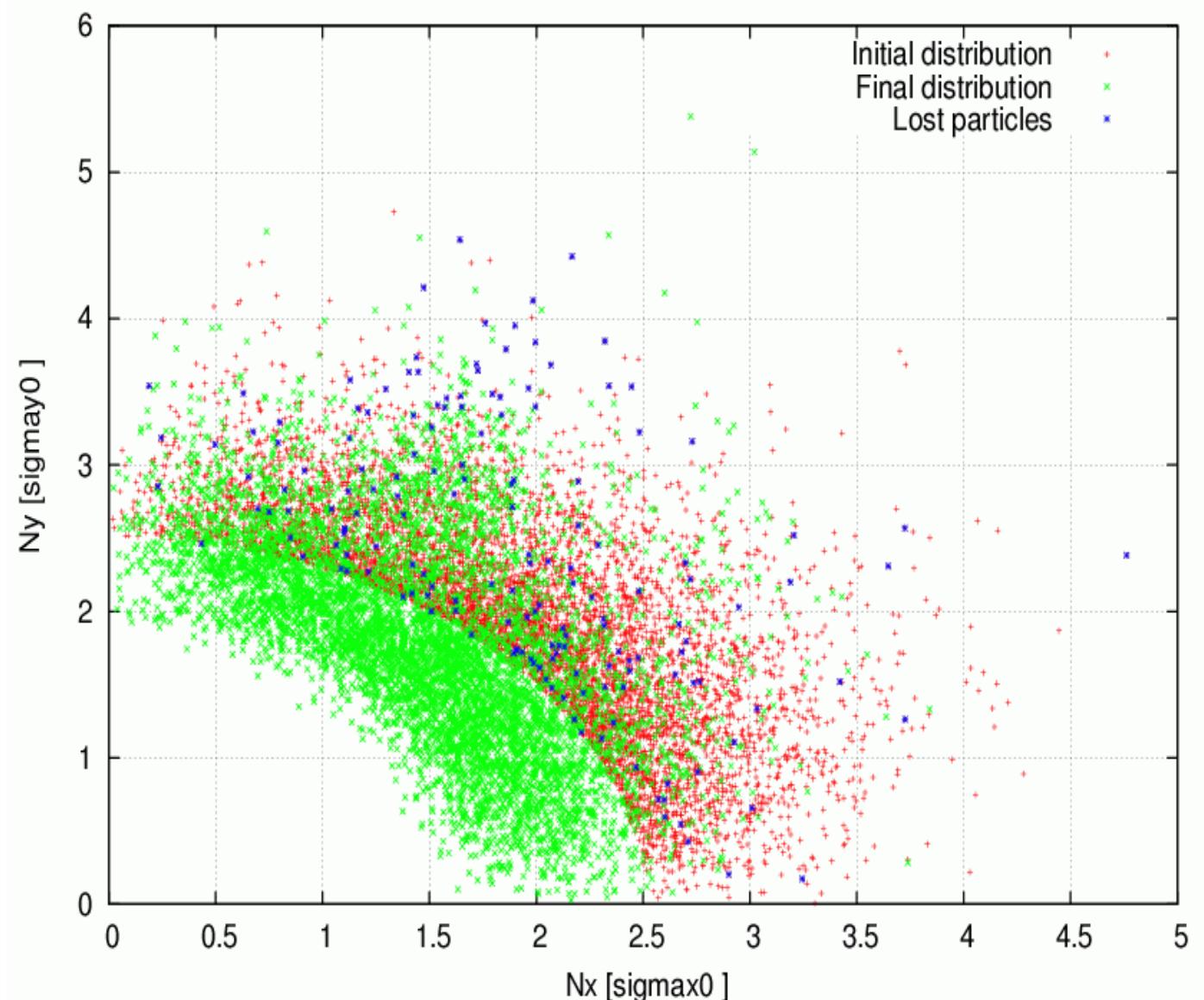


FBBC

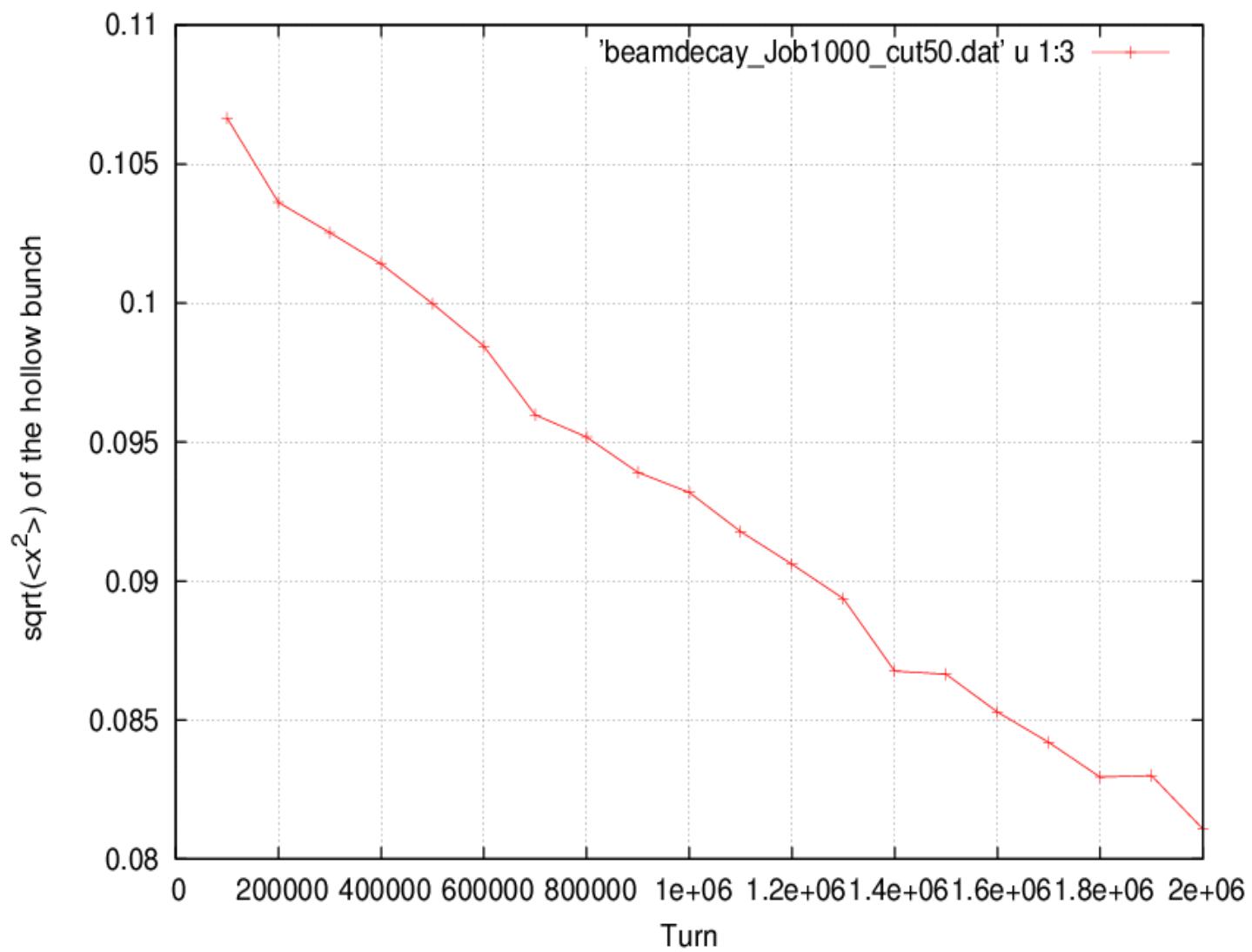


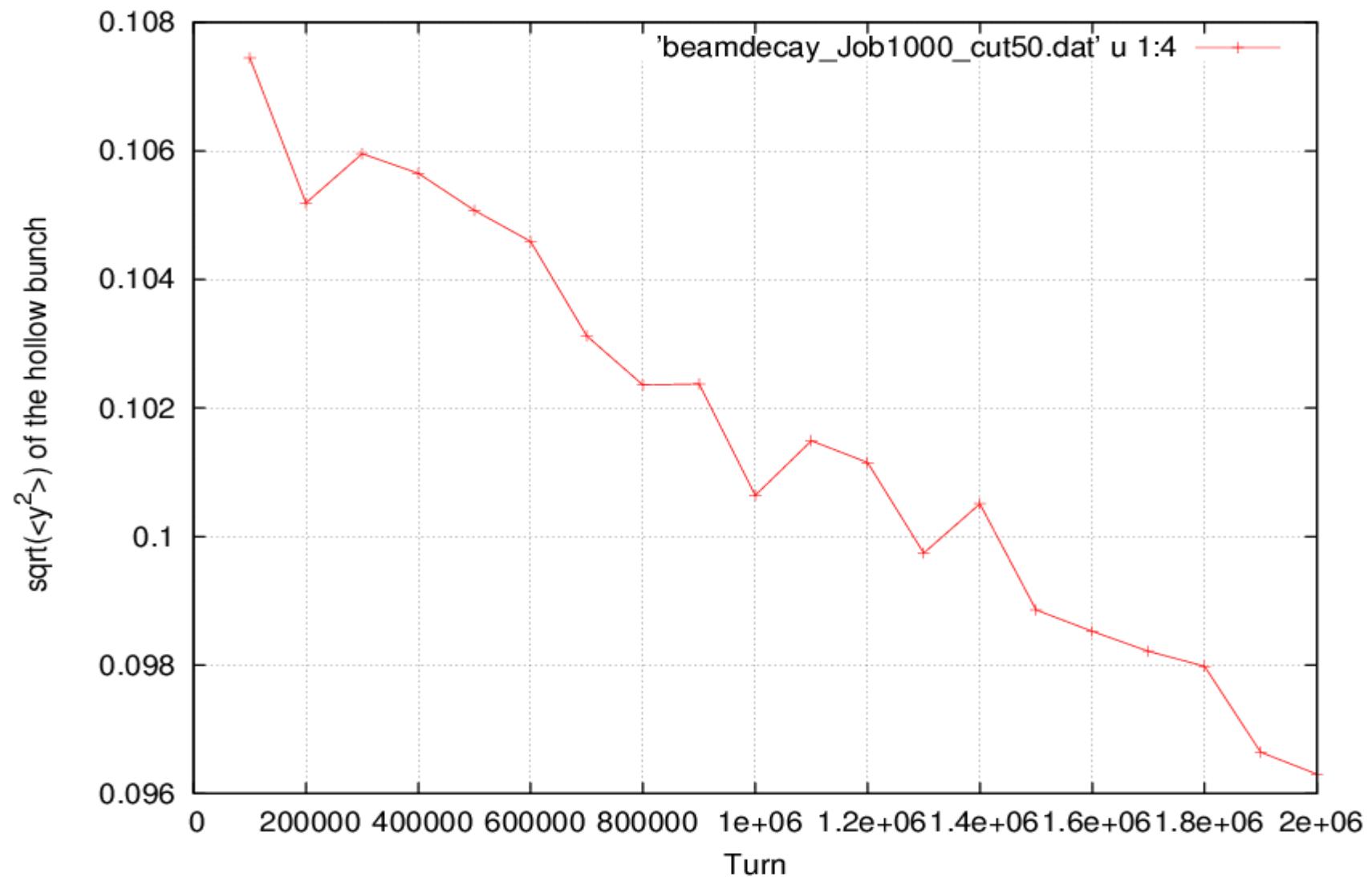
tracking
output
data lost



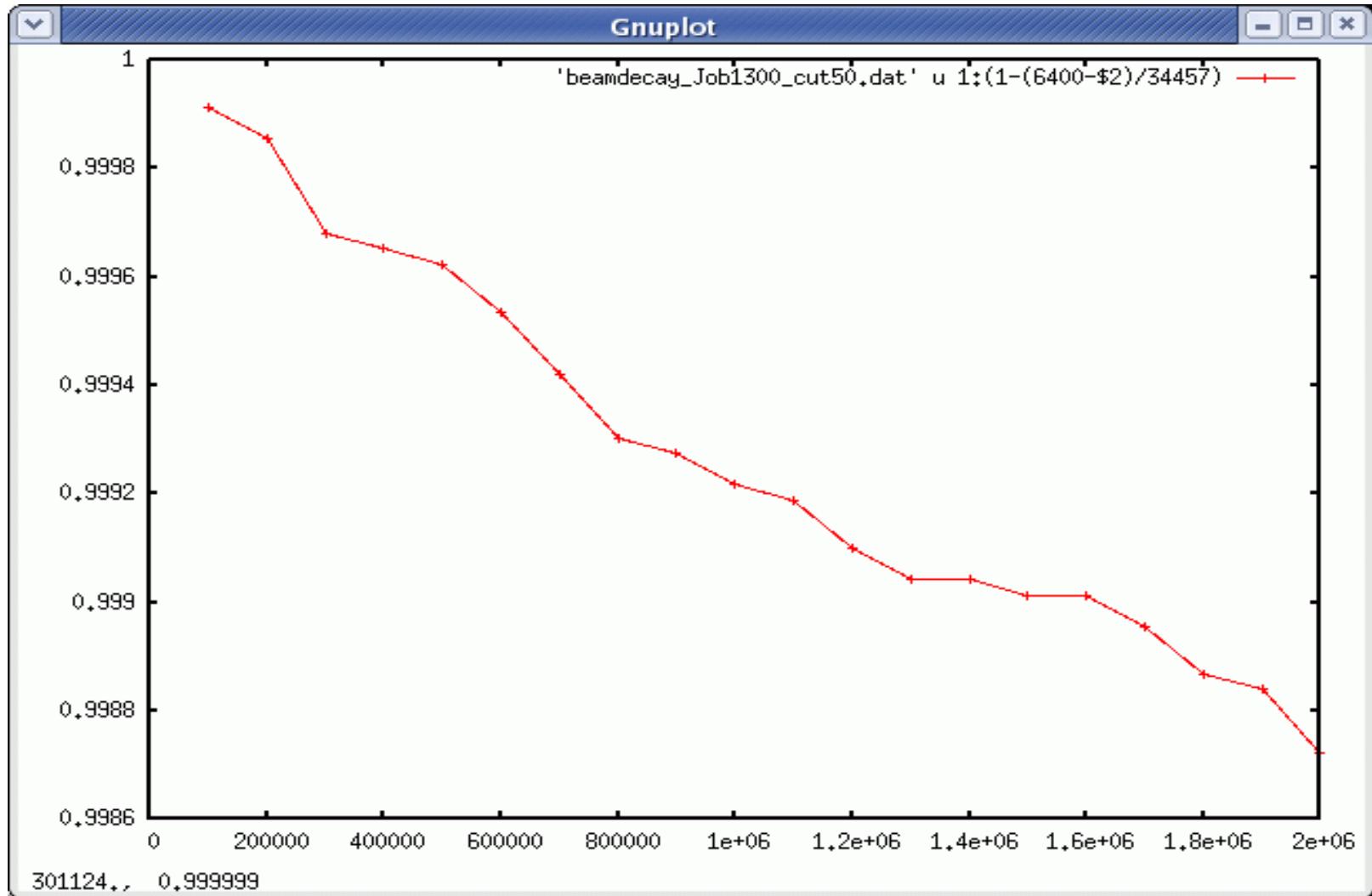


There are so many 'lost particles'.
Actually the particles in the aborted jobs are among them.

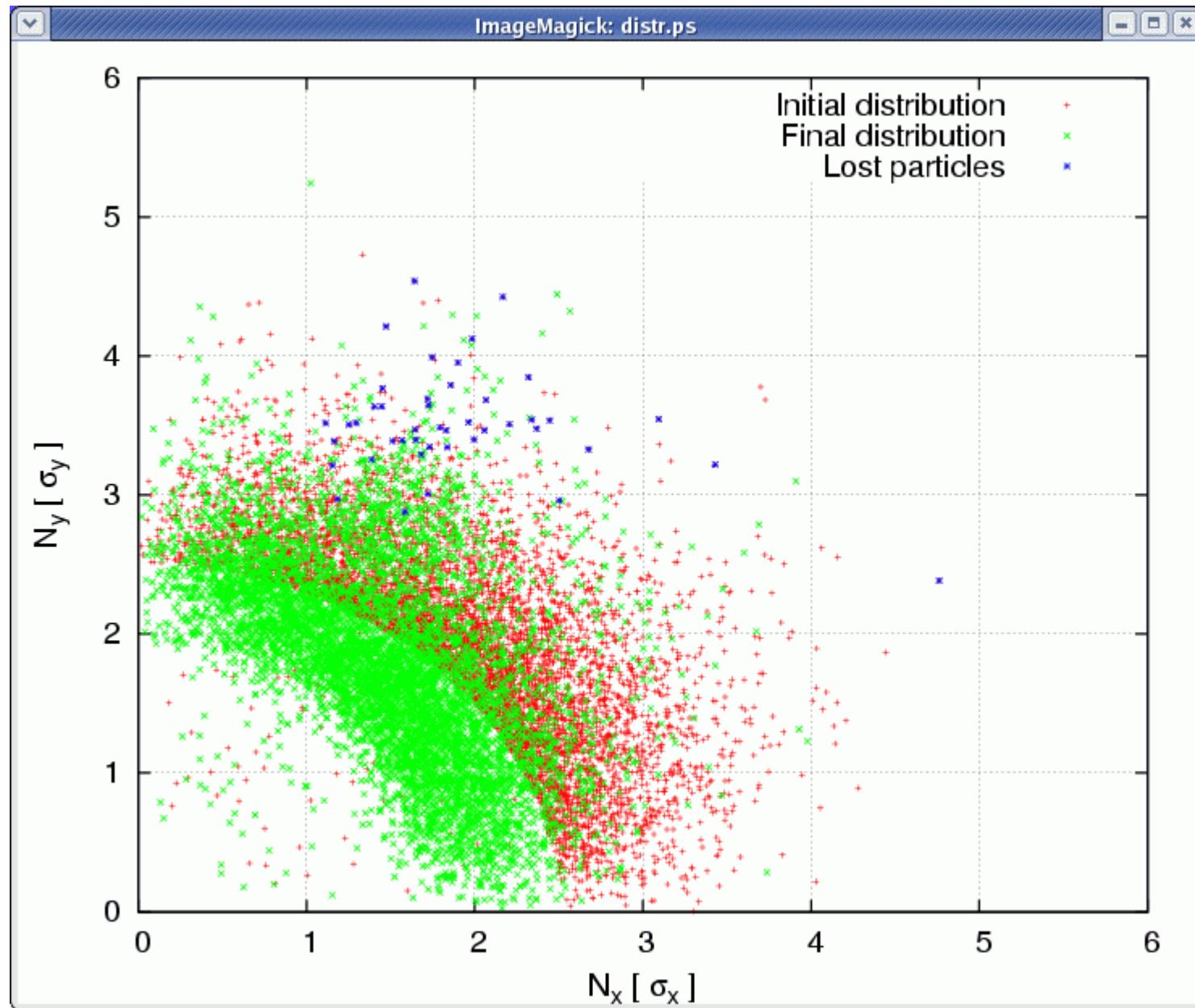




Redo the FBBC case with phase adjustment:



Re-do the above case: FBBC. (beam decay: 18%/hr.)



The lost particles are $N\sigma > 3$!

DA improved a lot comparing to that without phase adjustment.