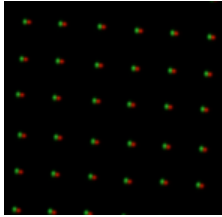


## Stage stability tests, Vale lab, June 2011

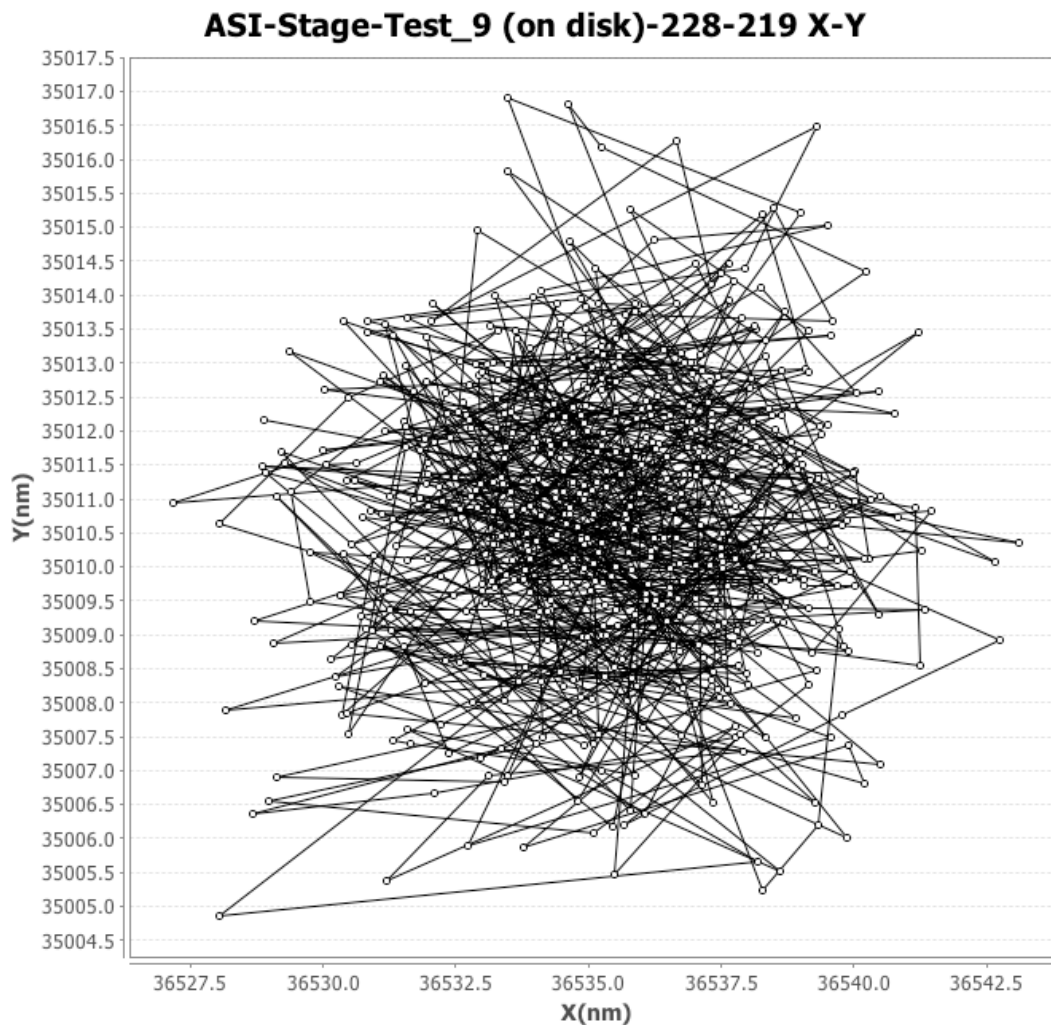
Method: Image gold coated slide containing 150nm holes. Use Gaussian fitting to determine localization of the hole (precision is  $\sim 0.4\text{nm}$ ).



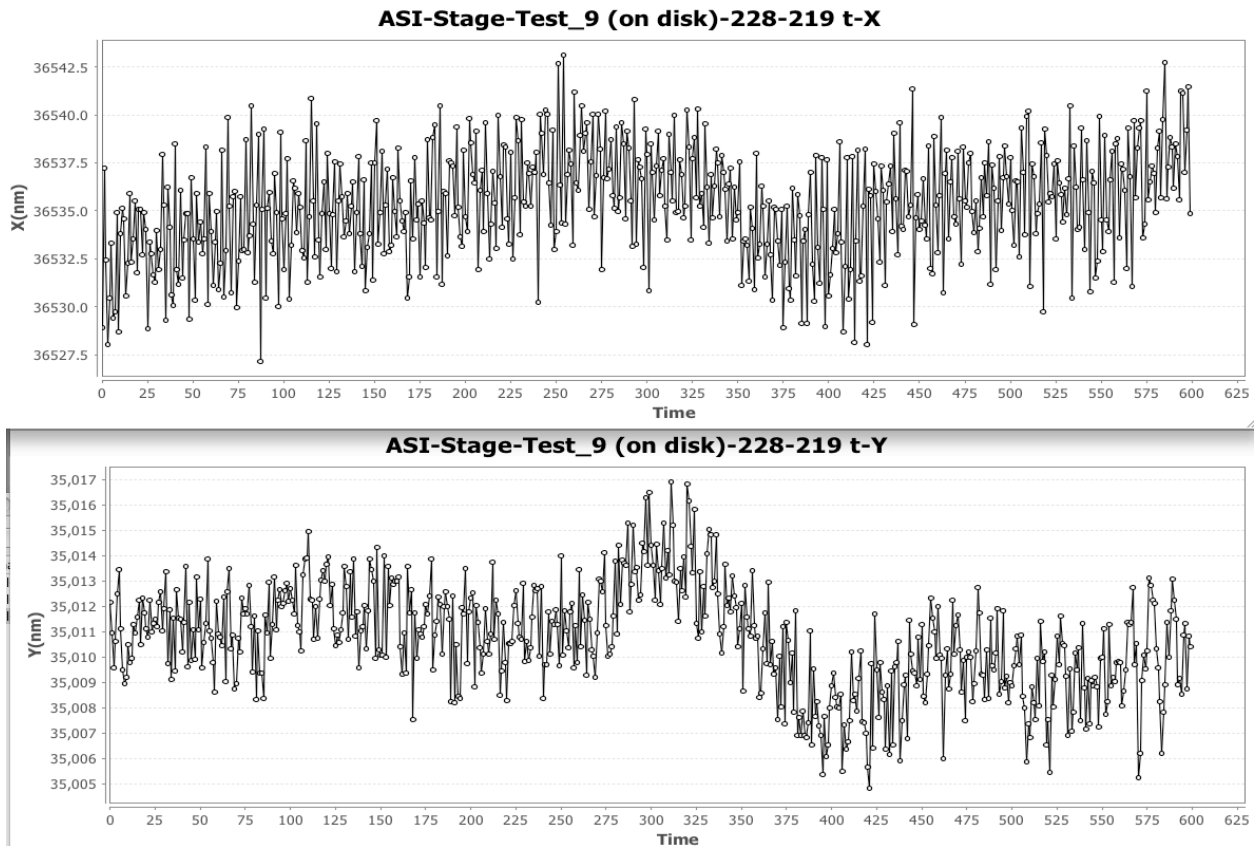
6/20/2011 ASI Stage with brushless DC motors and fine pitch (TE2000 -40TPI - #3335)

System stabilized for  $\sim 16$  hours.

Test Burst mode, one image per 45 msecond (600 images in about 29s):



Spread in X ~ 12nm, in Y ~17nm).



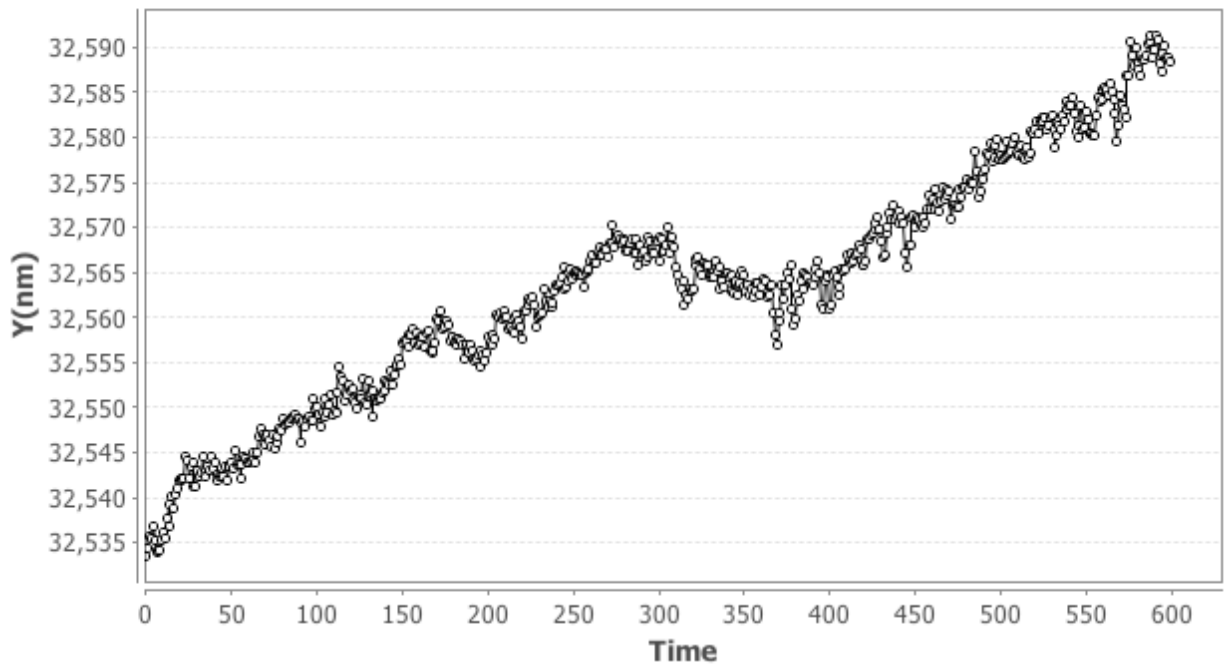
There are interesting oscillations in both X and Y.

6/21/2011 ASI Stage with brushless DC motors and fine pitch

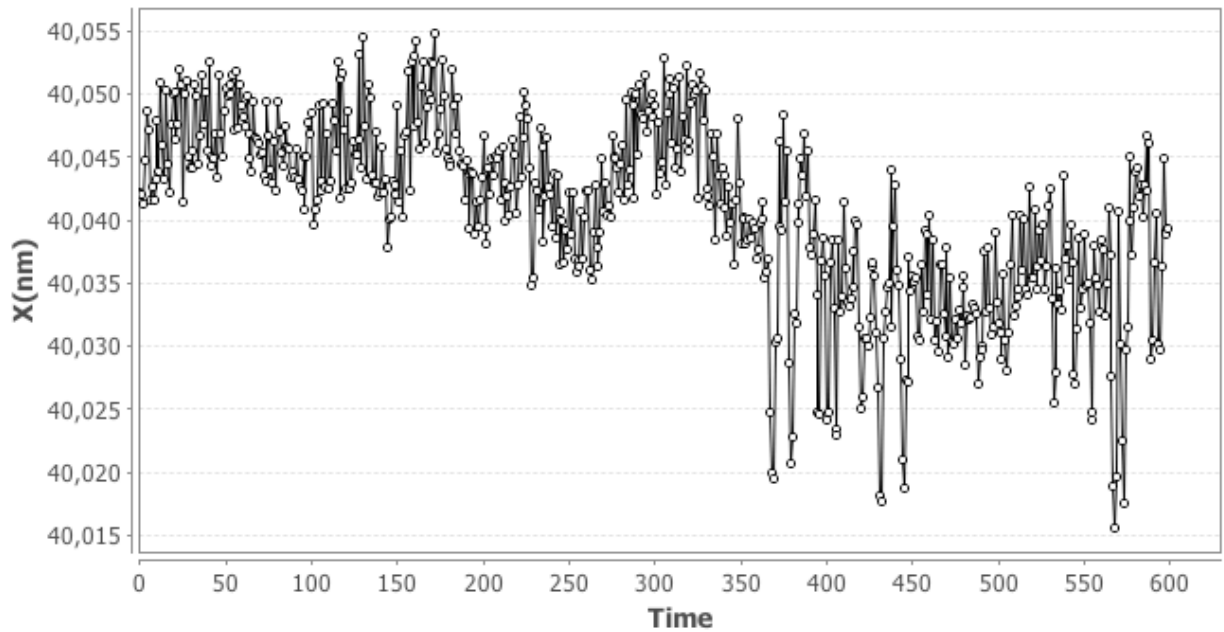
System stabilized for ~32 hours.

Test one image per second, 600 time points (10 minute)

### ASI-Stage-Test\_1 (on disk)-250-203 t-Y



### ASI-Stage-Test\_1 (on disk)-250-203 t-X



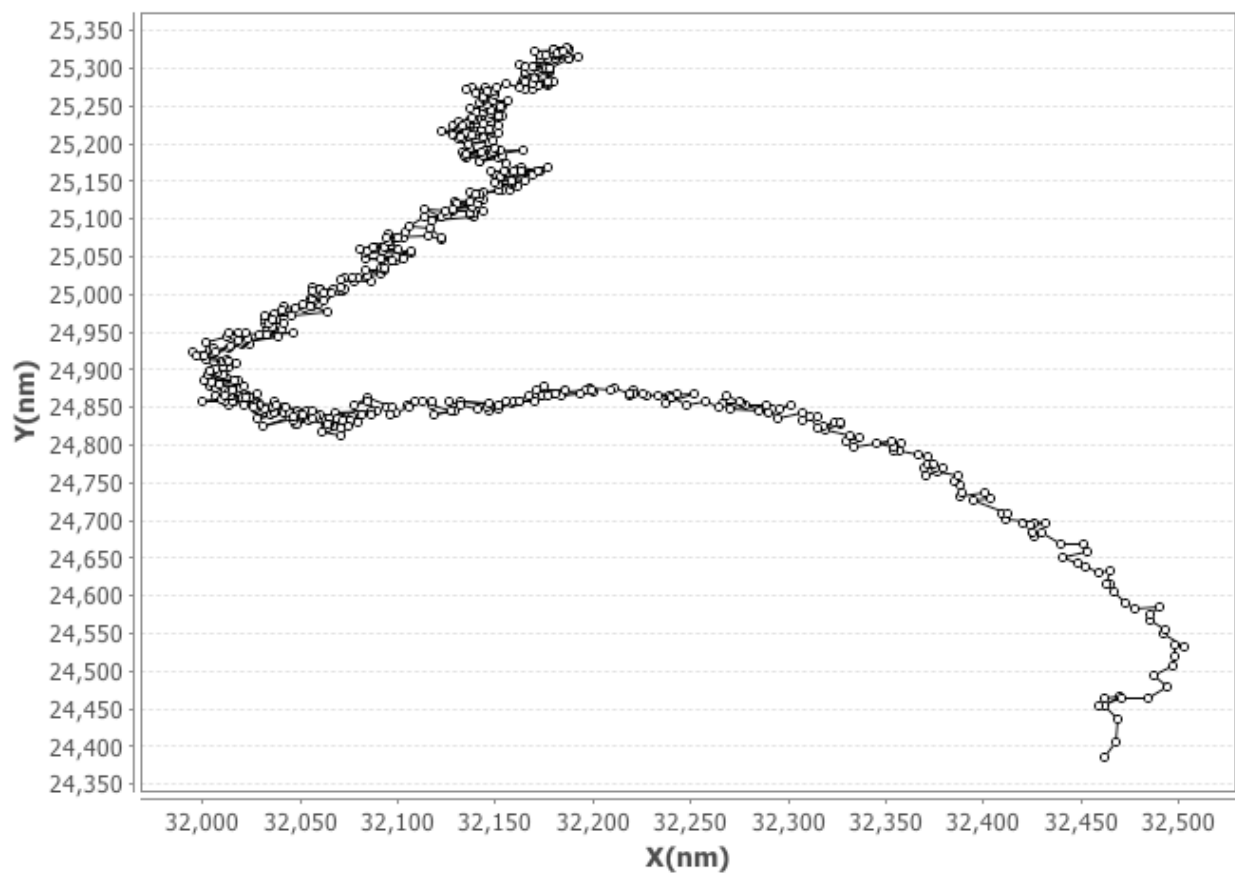
Drift in Y: 55nm (0.1nm per second), X: 15nm (0.025nm per second). X has an oscillation at about 0.25Hz, with a width of about 8nm (is this the objective oscillating)?

6/21/2011 ASI Stage with brushless DC motors and fine pitch

System stabilized for ~40 hours.

Test one image per minute, 600 time points (10 hours):

### ASI-Stage-Test\_5 (on disk)-203-152 X-Y



Drift in Y  $\sim 850\text{nm}$  ( $\sim 1.2\text{nm}$  per minute), in X  $\sim 500\text{nm}$  ( $\sim 0.8\text{nm}$  per minute). I don't have a corresponding temperature trace.