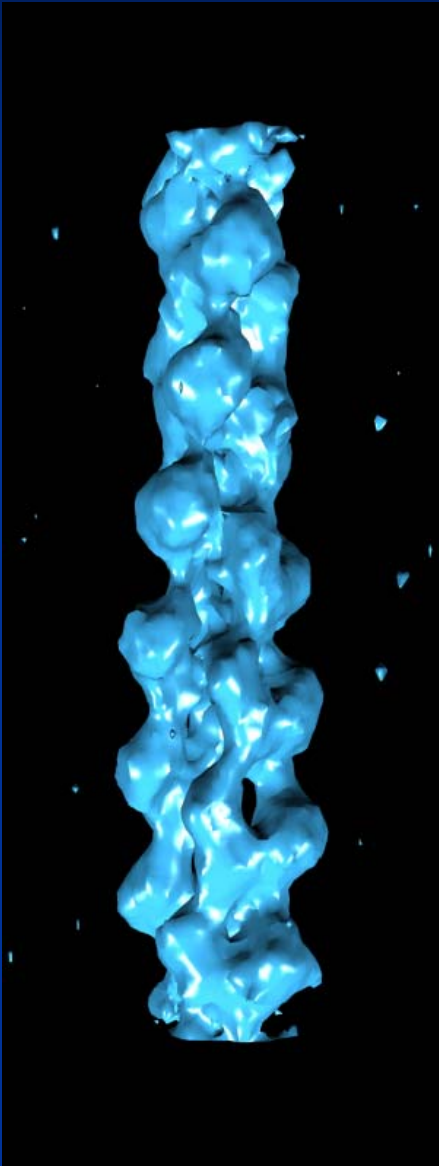
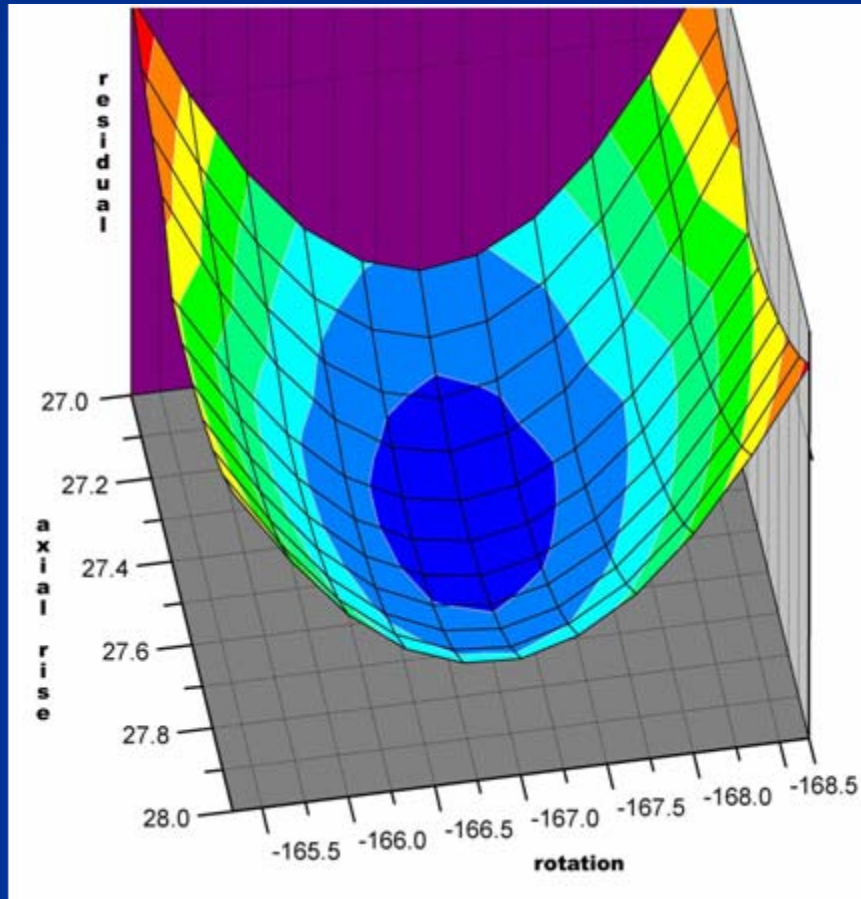


asymmetric
reconstruction

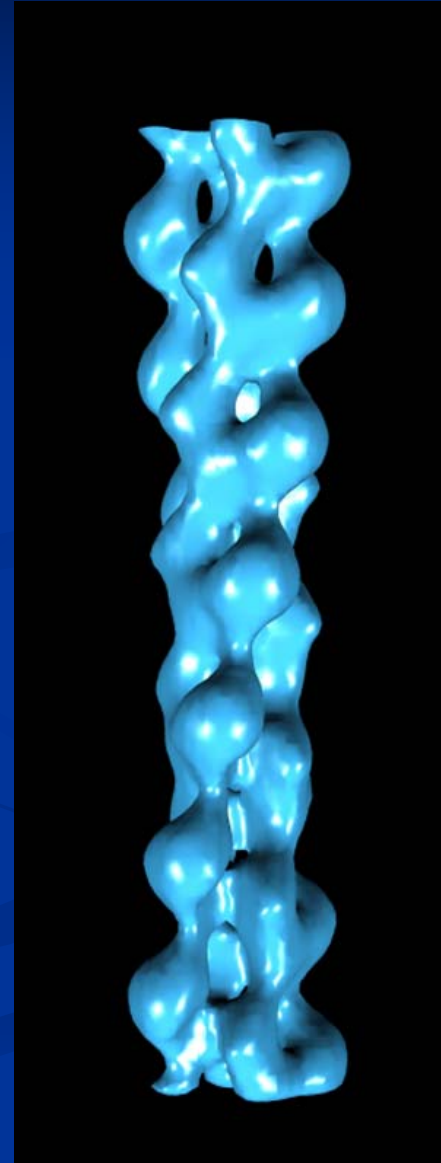


most novel part

symmetry search



imposed
symmetry



Summary of steps in IHRSR procedure

- Box stretches of filaments from EM
- cut into overlapping segments of fixed length
 - optimal length dictated by disorder, Signal/Noise
 - extent of overlap generated by axial rise per subunit
- Do initial alignment to center segments - avoid interpolation
- Generate an initial reference - featureless cylinder works!
- Make guess about approximate symmetry
 - Can use information from power spectrum, AP SR, 2_1 screw...
- Azimuthal increment (number of reference projections) determined by diameter of filament, resolution desired
- Check convergence, check AP NQ statistics, check agreement between power spectrum and Fourier Transform of reconstruction

generator creates IHRSR script

IHRSR Script Generator

Select input image stack file

Number of images to use? 1000

Image size (pixels) 100

Scale (Å/pixel) 4.0000

radial minimum (Angstroms) 0.0000

radial limit (Angstroms) 50.0000

Angular increment of reference projections (degrees) 4.0000

In-plane angular deviation allowed from 0 or 180 degrees 10.0000

Point group?

Click if point group symmetry exists n (rotational symmetry) = 2

Number of cycles 50

Symmetry search

Center of Search:

Rotation per subunit (degrees) 0.0000 Rise (Angstroms) 0.10000

Search increments:

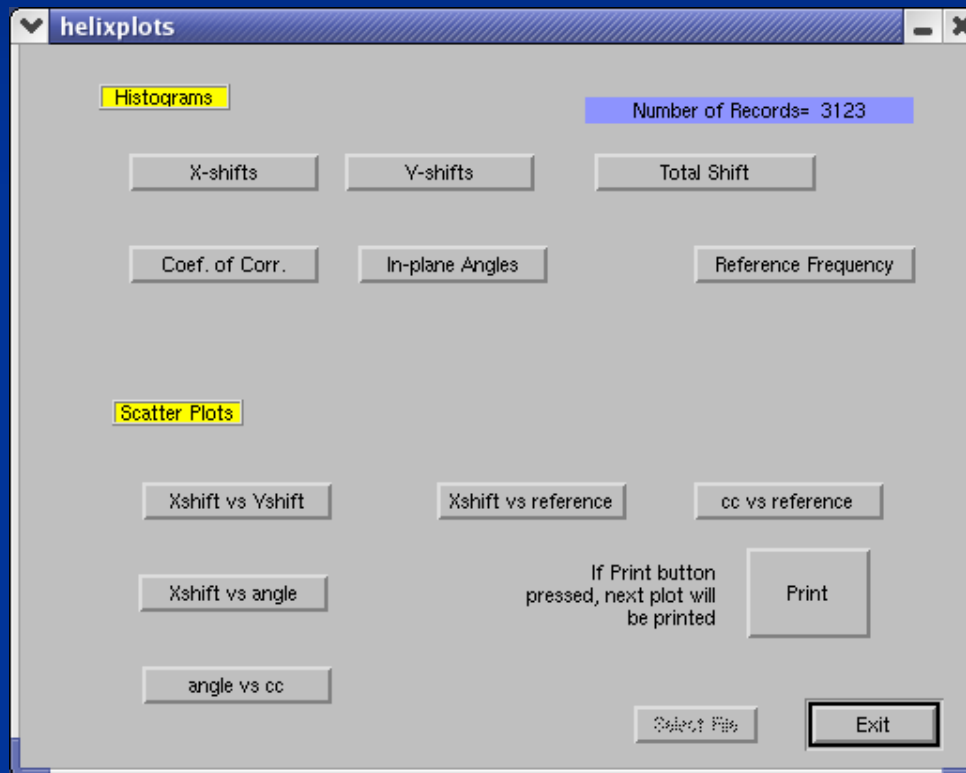
Delta Phi 0.10000 Delta z 0.10000

Search range (pixels) in AP NQ 2

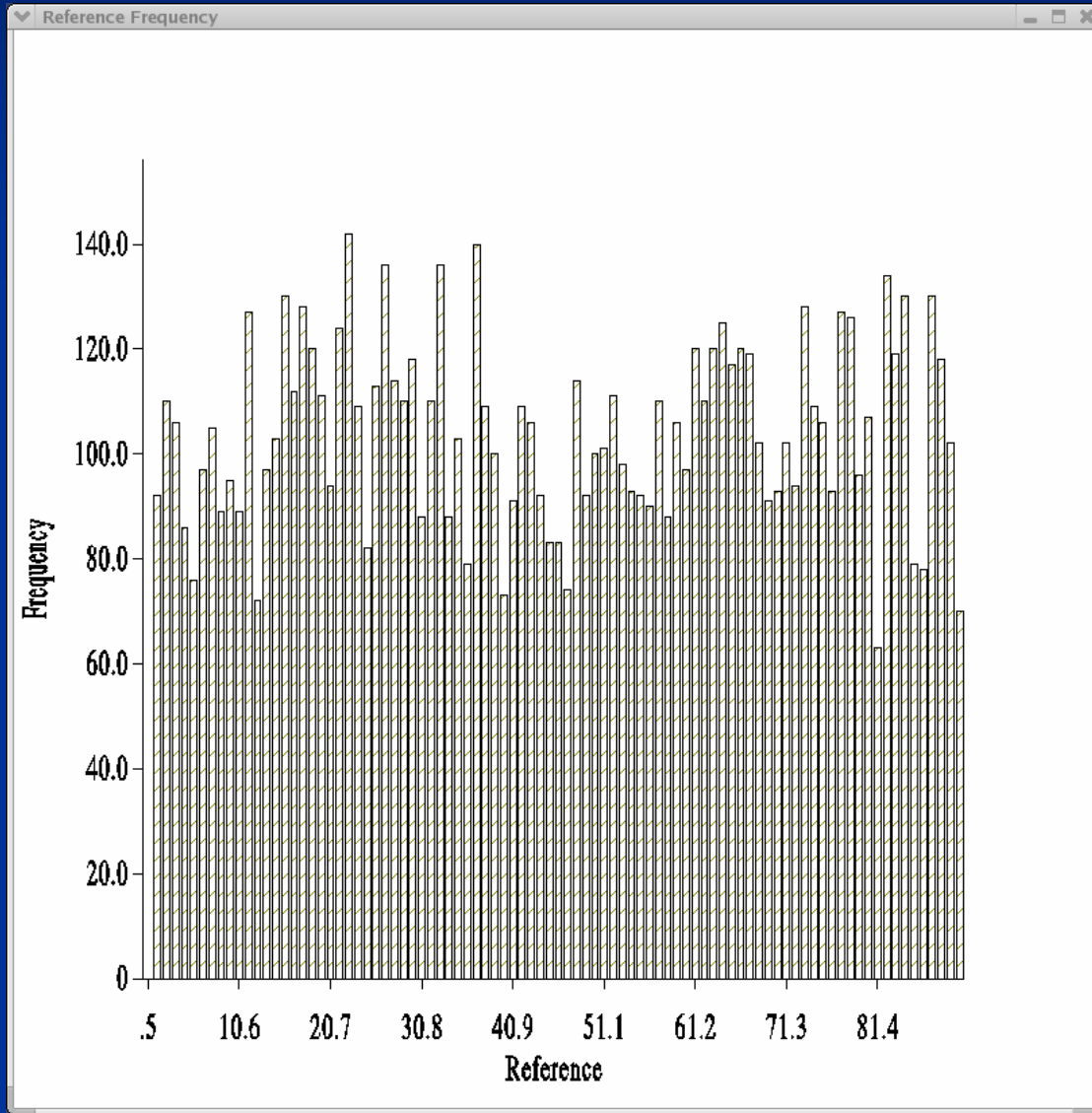
Finish

Quit

hplotn is utility for displaying alignment parameters

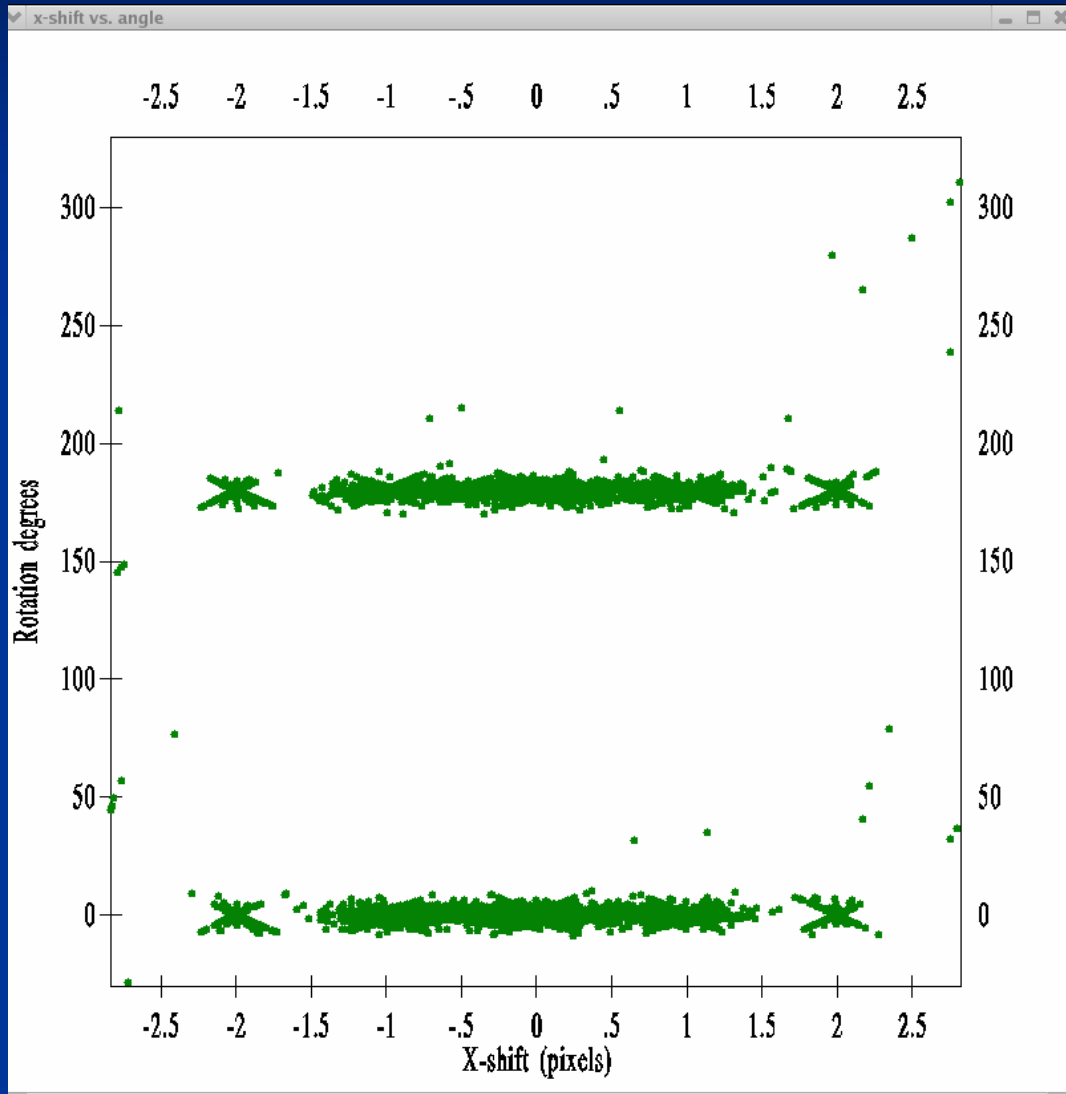


reference frequency distribution is important reality check



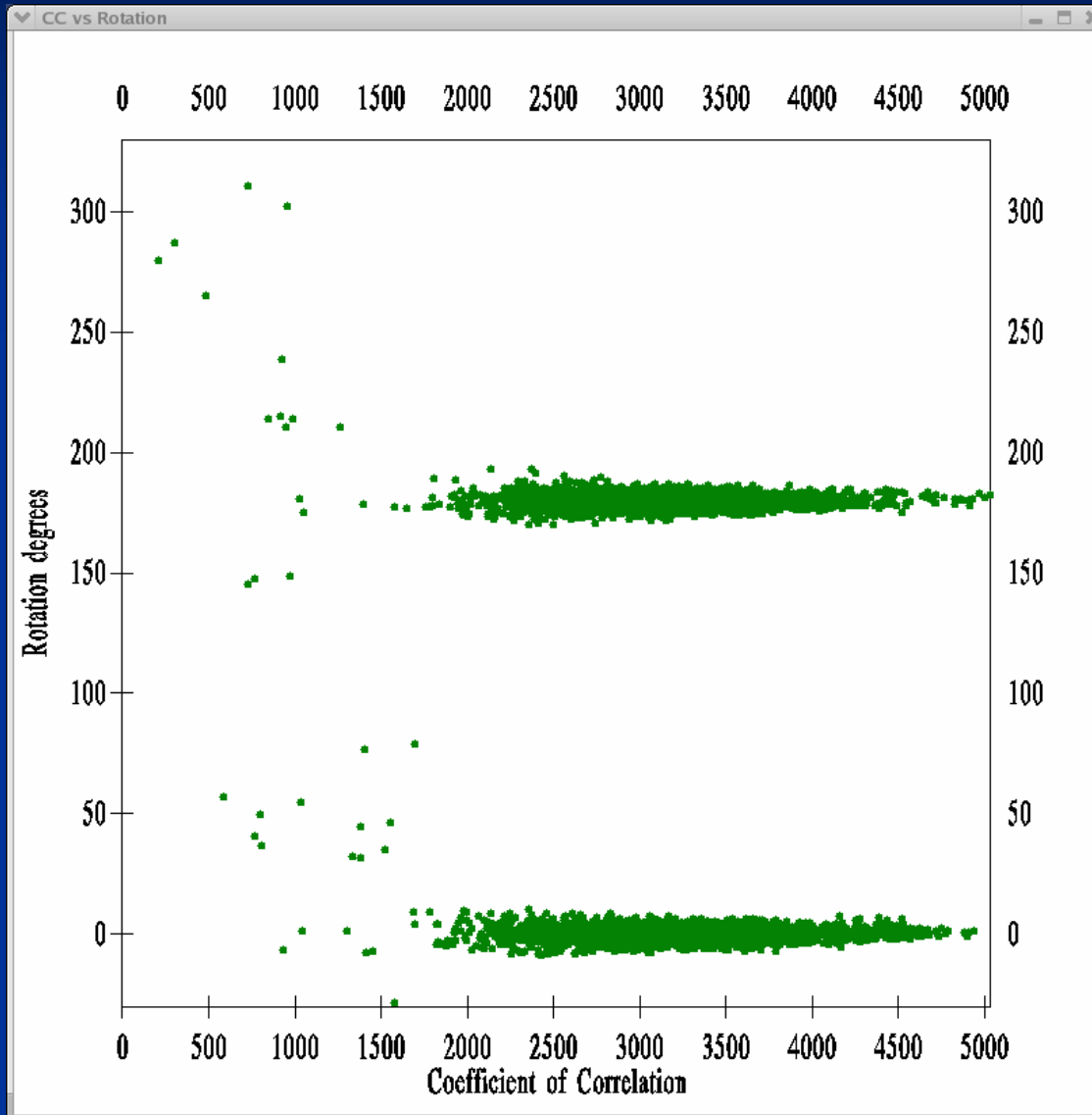
pili, n=9,389
90 references

no correlation should exist between shifts and rotations



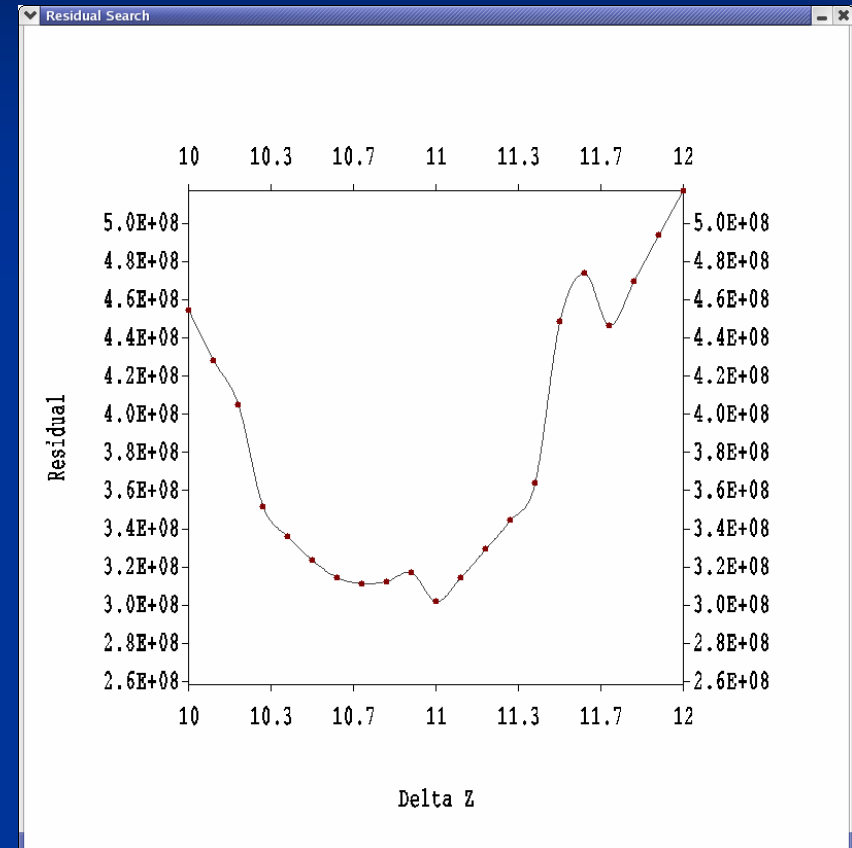
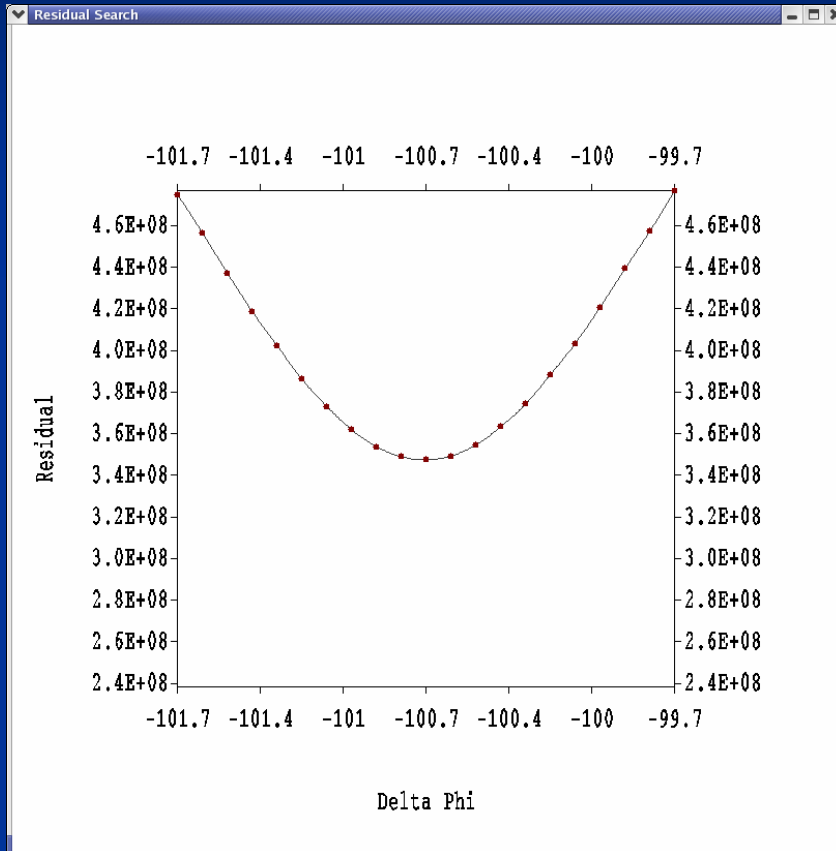
pili, n=9,389

“weird” rotations have poor coefficients of correlation

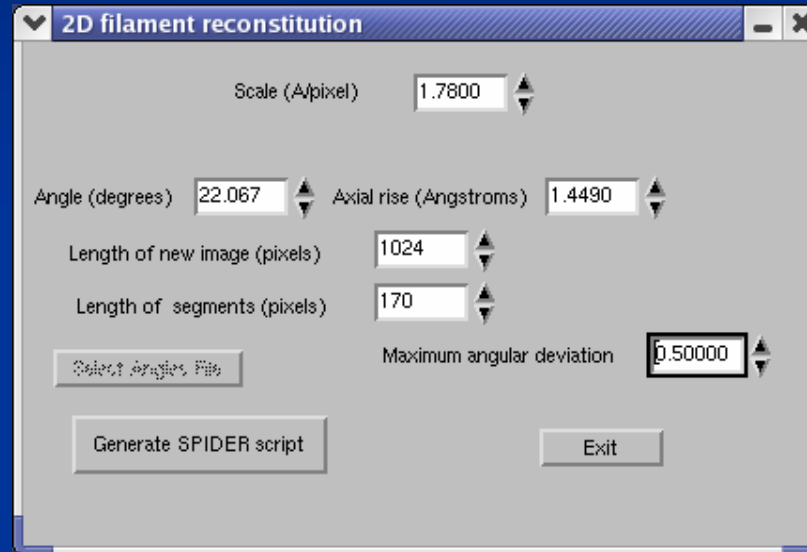


pili, n=9,389

xhelicals is graphical symmetry search

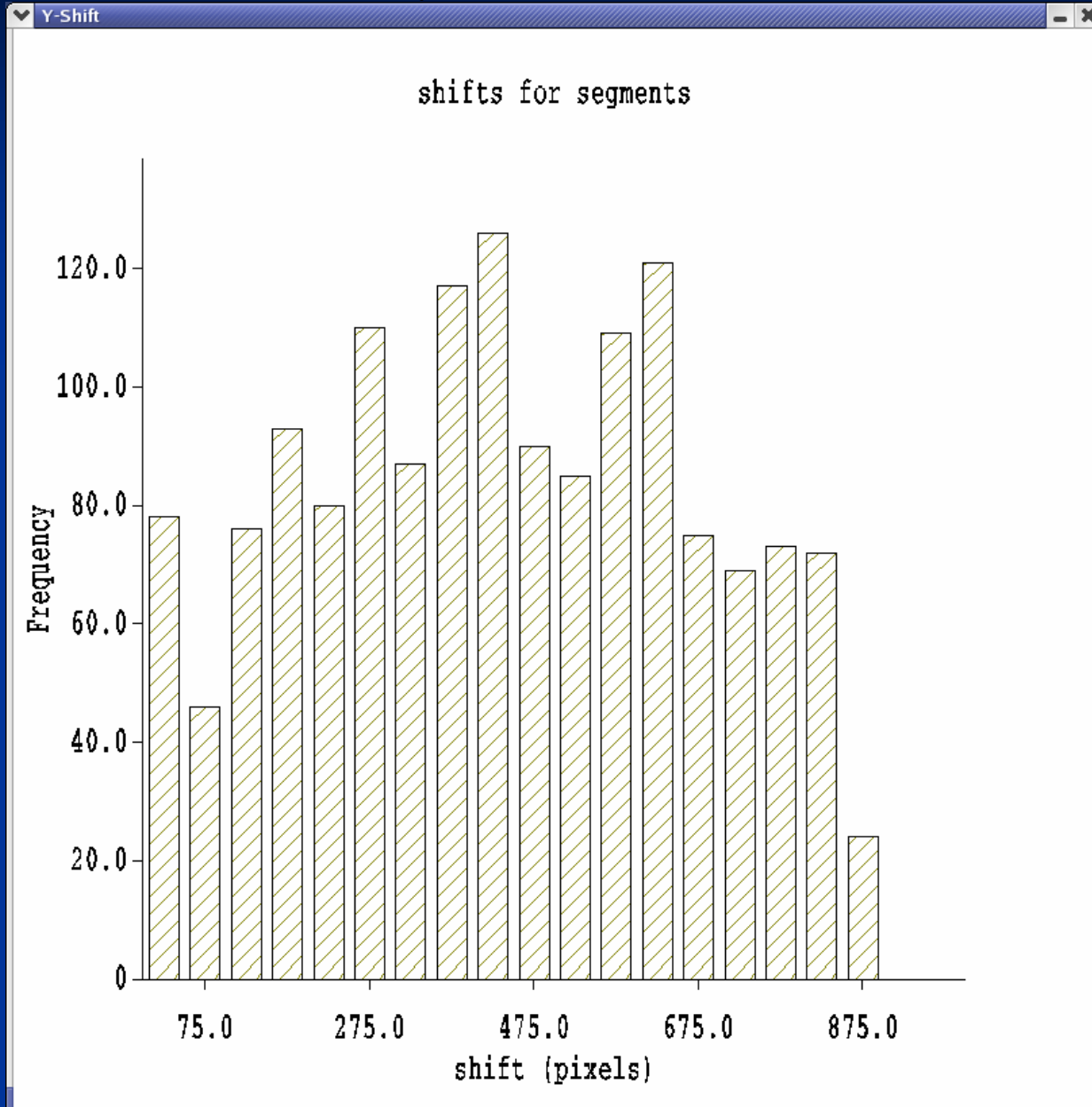


filrecon is utility for filament reconstitution

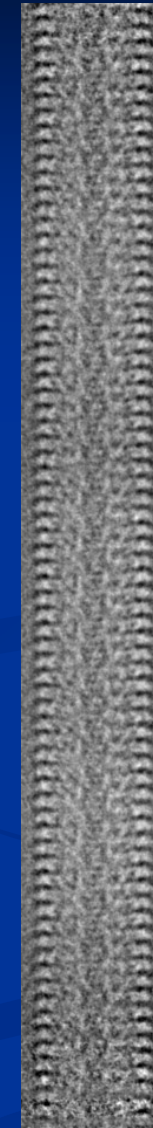
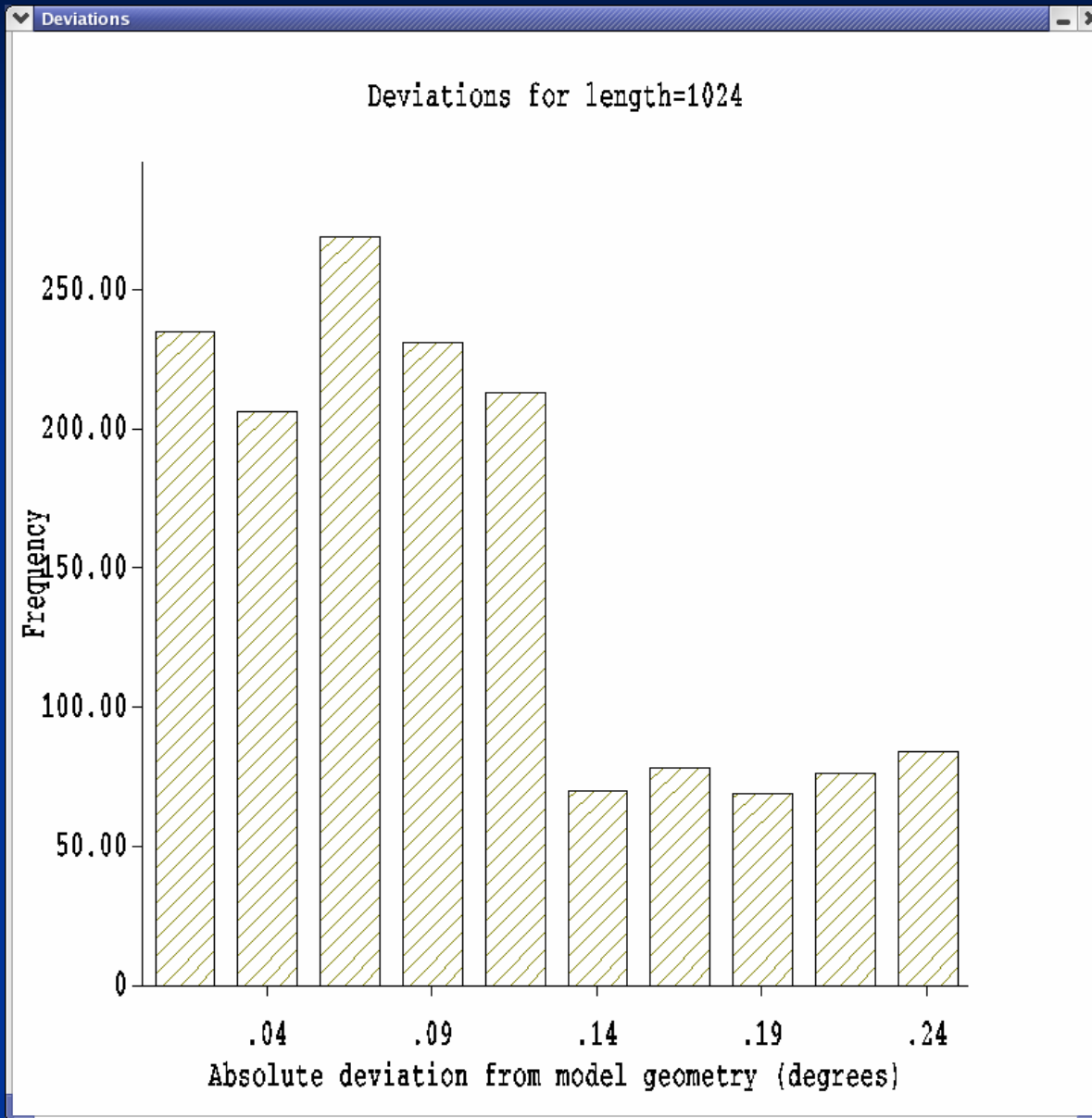


parameters are from TMV...

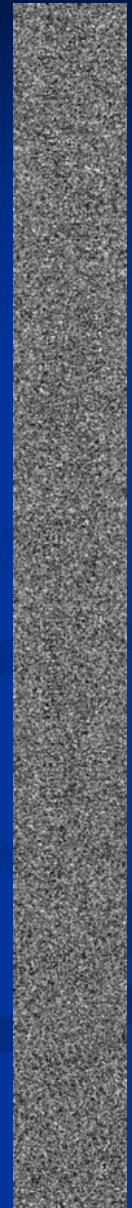
filrecon is utility for filament reconstitution



filrecon is utility for filament reconstitution



n=1,531



What is to be done (today)?

- create solid cylinder as starting model

```
../spider_linux_mp
```

```
MO 3
```

```
volume001
```

```
100,100,100
```

```
...
```

```
run generator to create
```