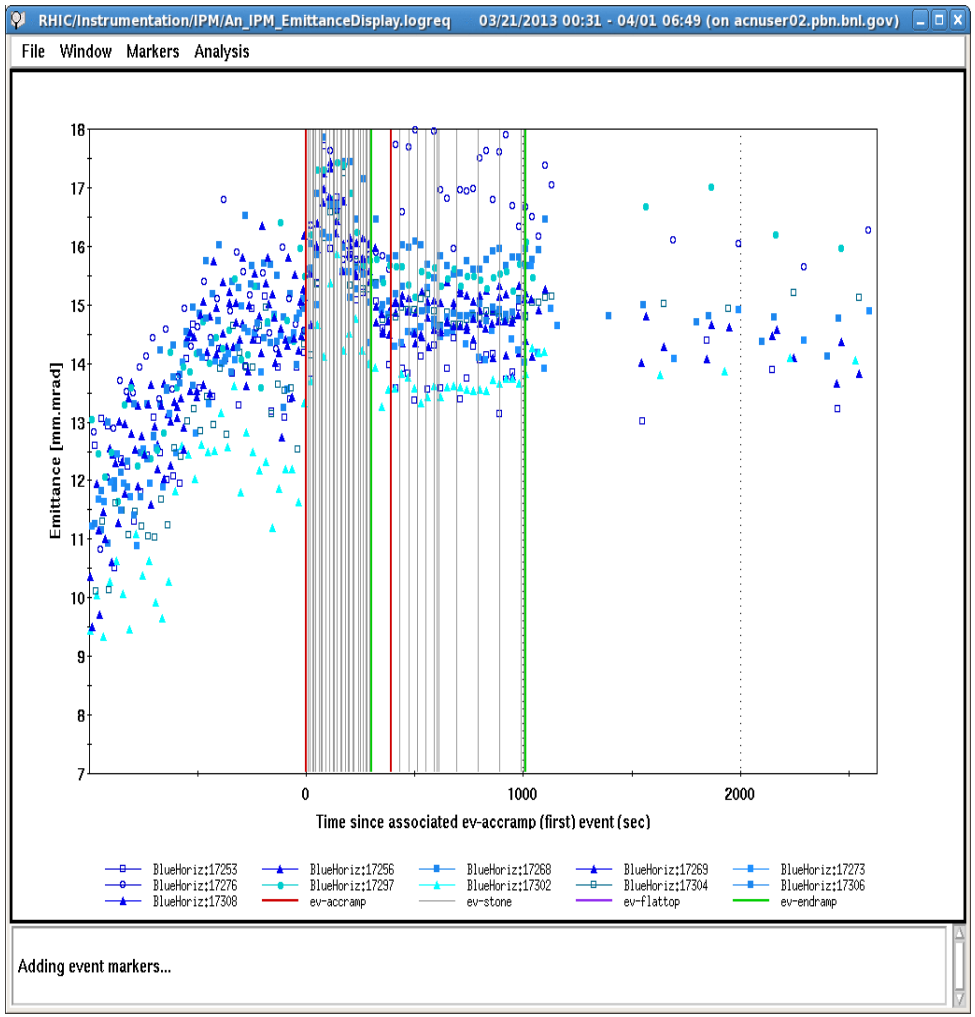
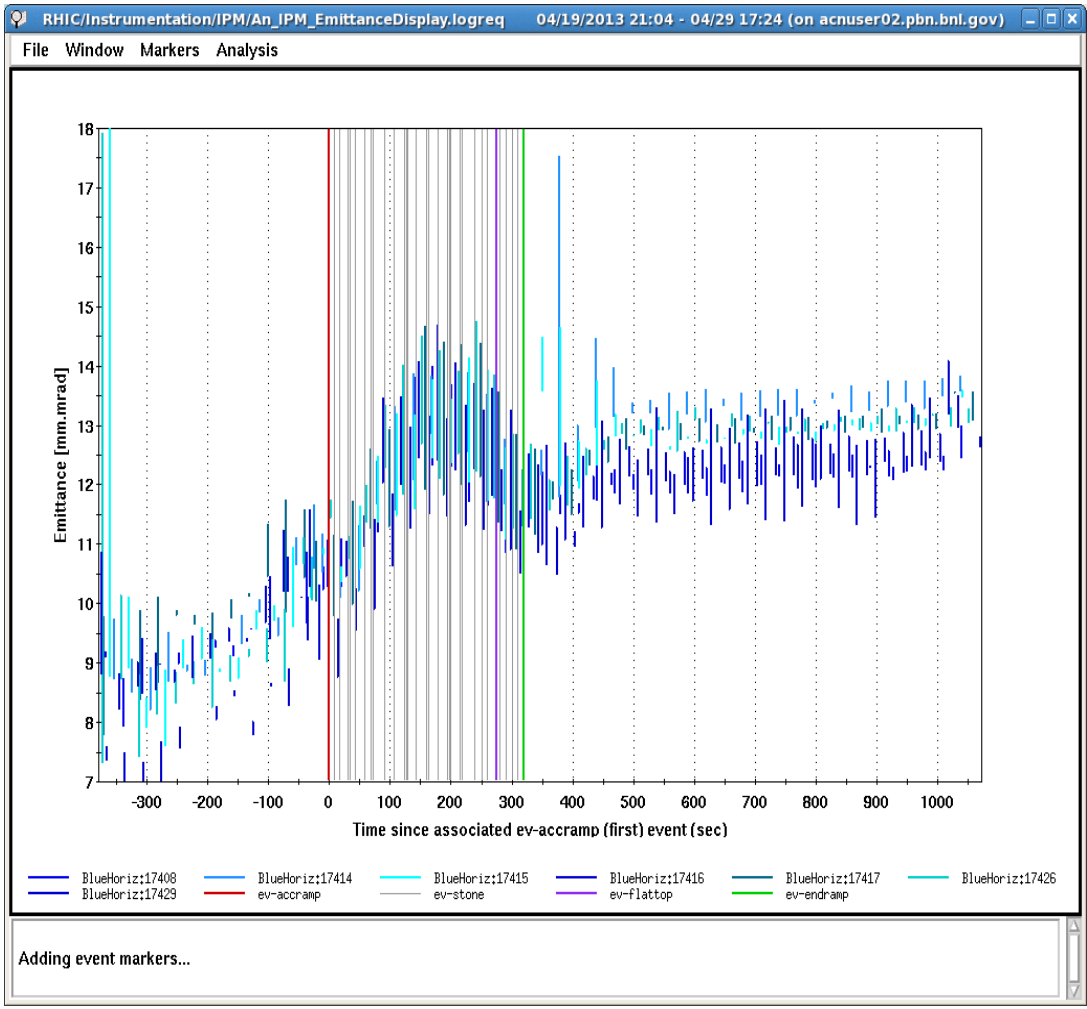
RSC Meeting May 31st

- Cause of Store to Store Fluctuations of Polarization:
  - Emittance
  - Store Tune
  - Spin Tune perturbation
    - Rotators + orbit offset at STAR

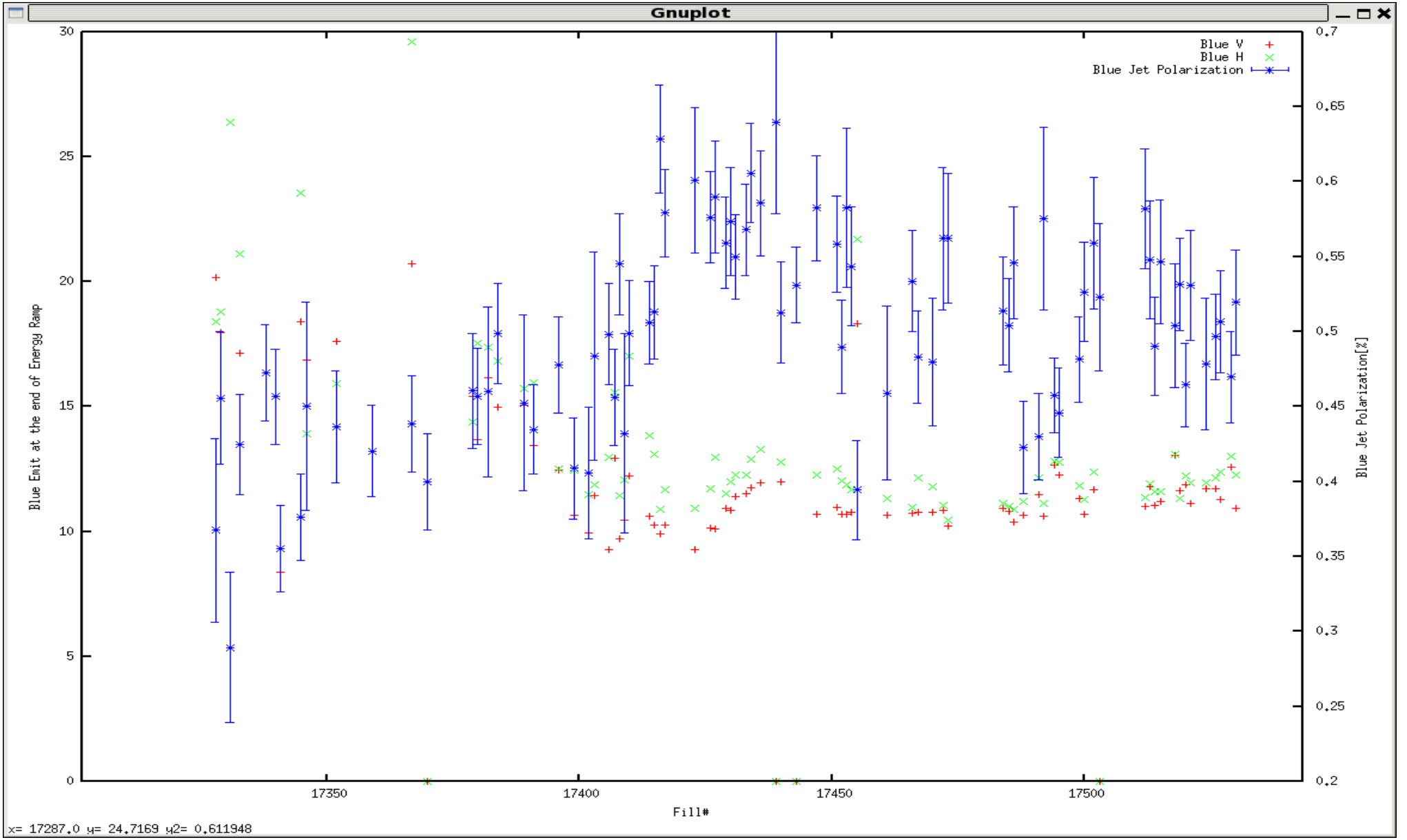
Emittance Story



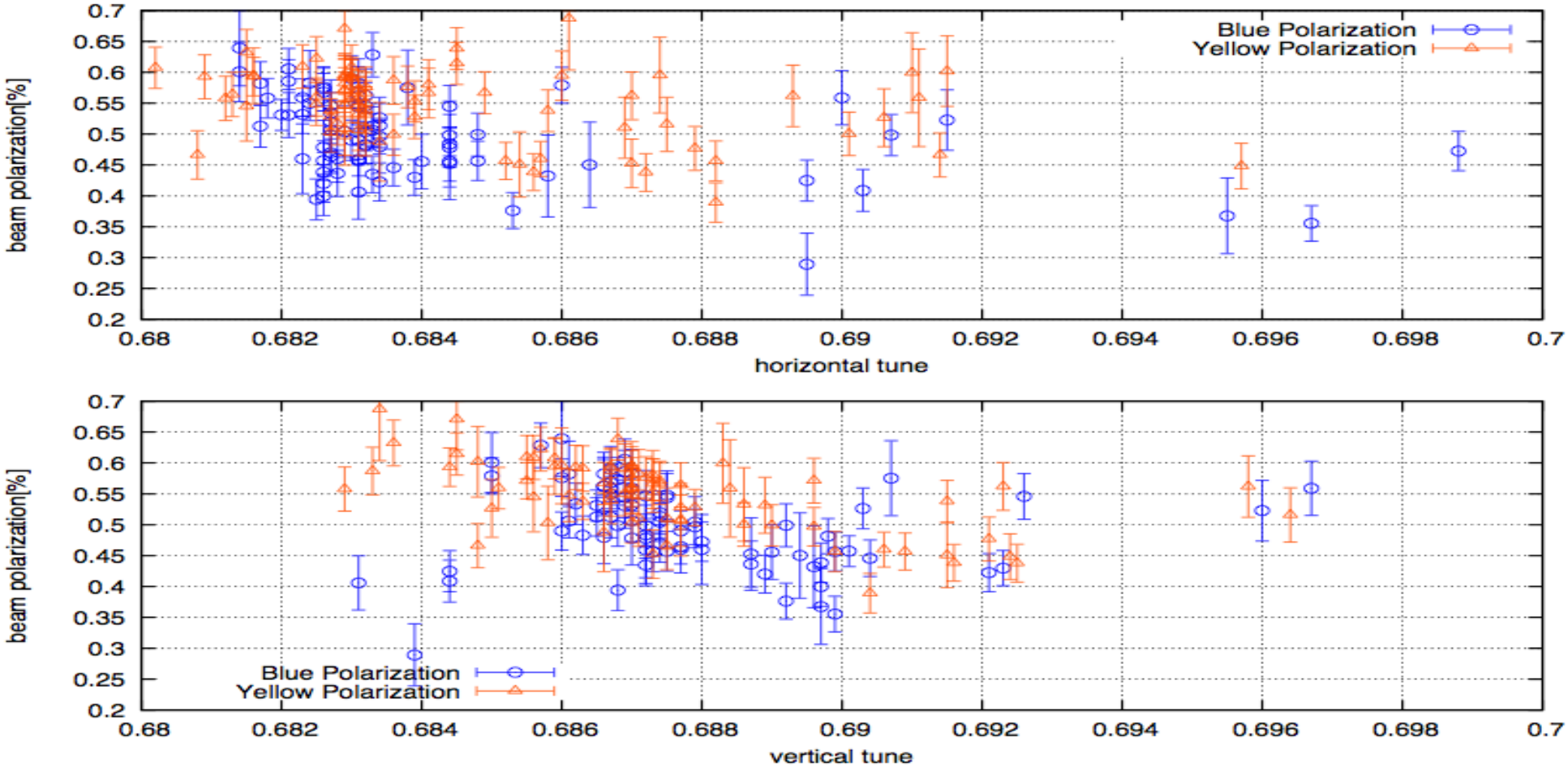


We went from this → to this

Jet and Emittance (courtesy Mei)



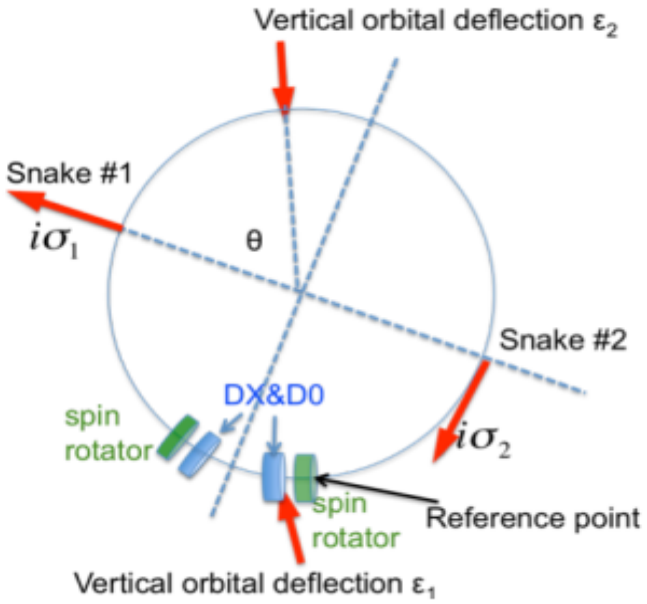
Tune Response (Courtesy Mei)



Looks like hitting 11/16th snake resonance = 0.6875

Spin Tune Shift

$$\sin(\Delta Q_s \pi) = -[n_2 \cos\frac{(1+G\gamma)\varepsilon_2}{2}\sin\frac{(1+G\gamma)\varepsilon_1}{2} - n_1 n_2 \sin(\frac{(1+G\gamma)\varepsilon_1}{2})\sin(\frac{(1+G\gamma)\varepsilon_2}{2})\cos(G\gamma(\frac{\pi}{2}-\theta)) - n_1^2 \sin(\frac{(1+G\gamma)\varepsilon_1}{2})\sin(\frac{(1+G\gamma)\varepsilon_2}{2})\sin(G\gamma(\frac{\pi}{2}-\theta))]$$



We see Spin Tune perturbations of
Between 0.0095 to 0.017. This shift
In the Spin Tune will change the location
Of the 11/16th snake resonance:

Nuy * N = vs +/- k

If The Spin tune shifts the location changes

Spin Tune Perturbation (Courtesy Mei and Sam)