

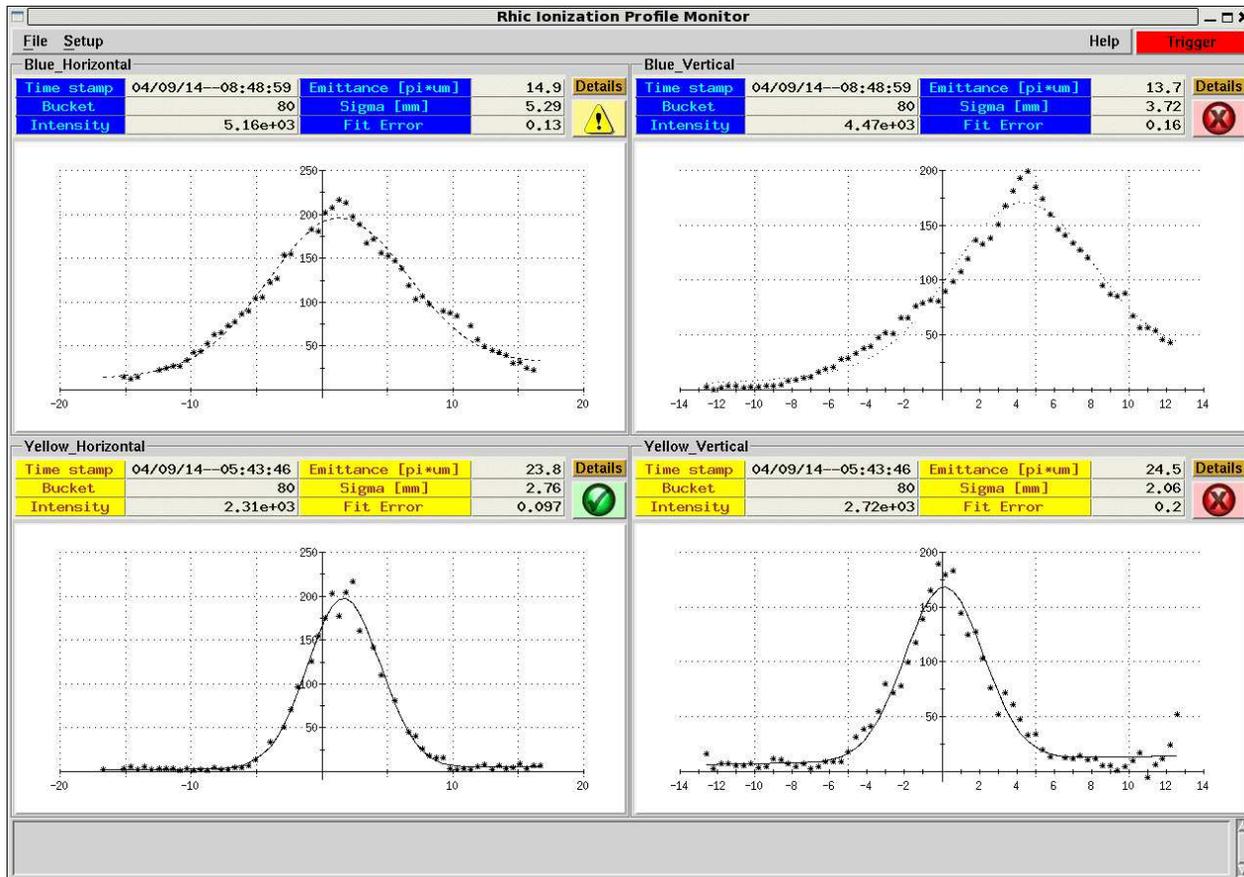
# Dynamic aperture measurements at injection

C. Montag  
April 9, 2014

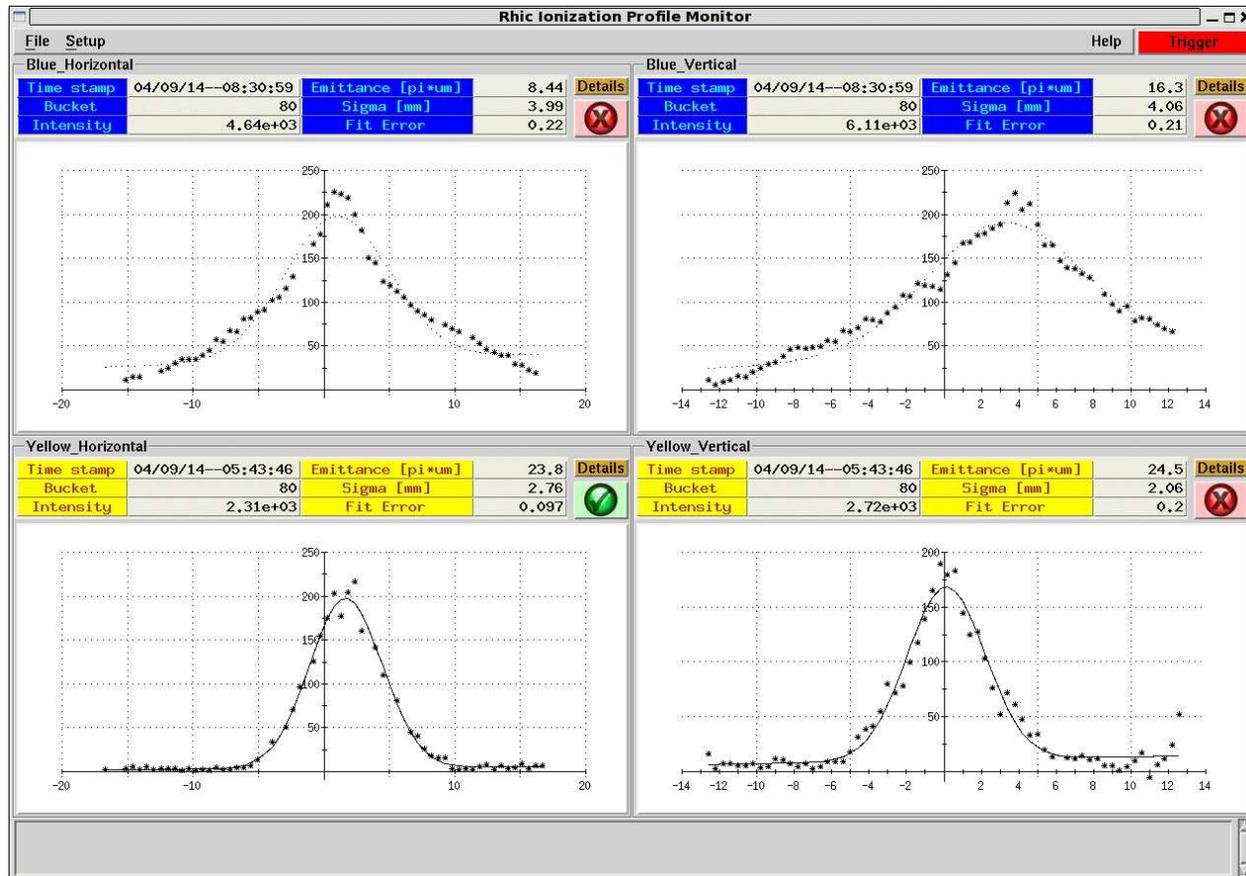
- Multipole errors at regular injection energy are similar to those at 2.5 GeV Au
- Measured dynamic aperture at 5.86 GeV p (equivalent to 2.5 GeV Au) was surprisingly small
- Tunes at 5.86 GeV had been set to .17/.13 - not a good working point
- Measured dynamic aperture at regular injection energy to confirm that working point was the problem at 5.86 GeV p

- Beam was already blown up in AtR due to quadrupole magnet problem
- Intentionally mis-steered injection orbit to fill available emittance in RHIC
- Pulled out collimators to increase physical aperture
- Mis-steering reduced injection efficiency by 50 percent
- Performed measurement at four different working points

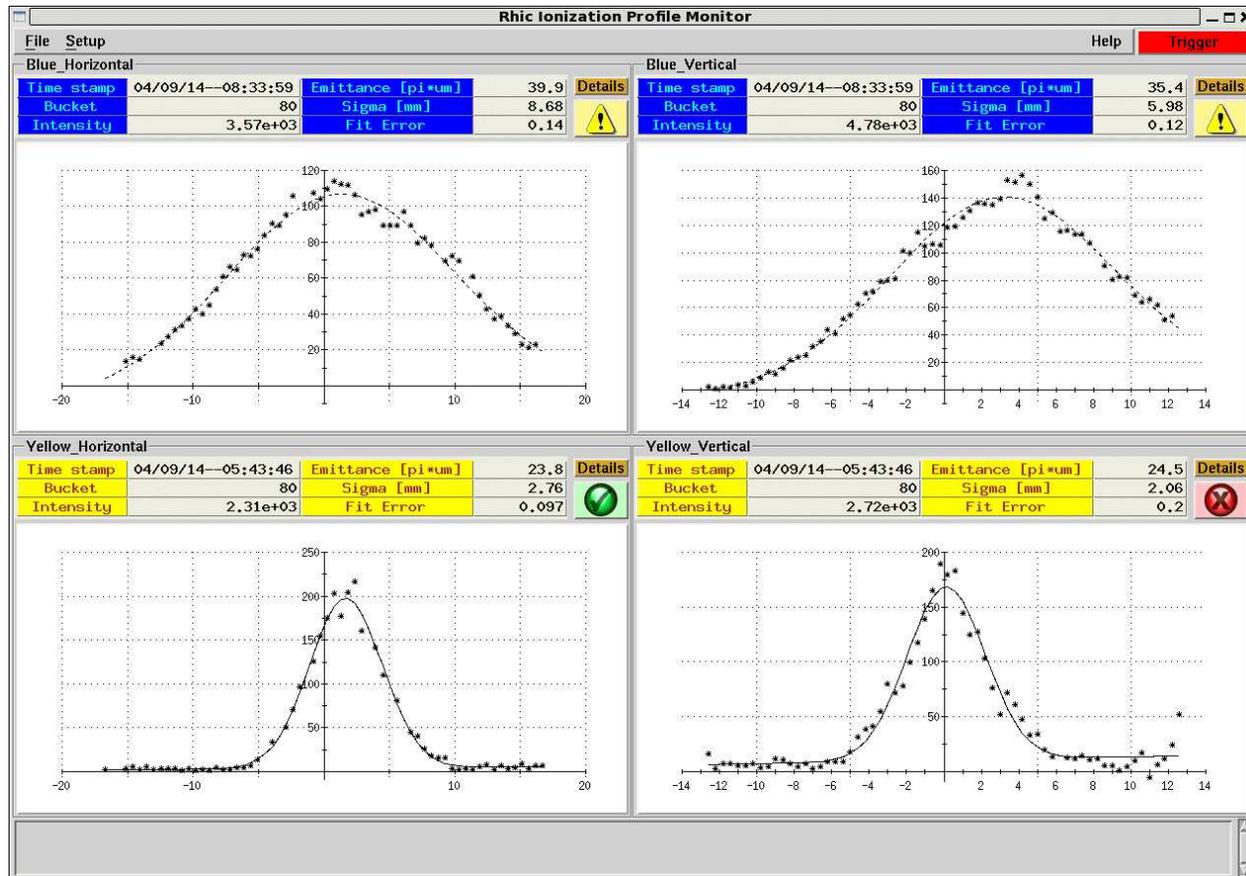
.23/.22



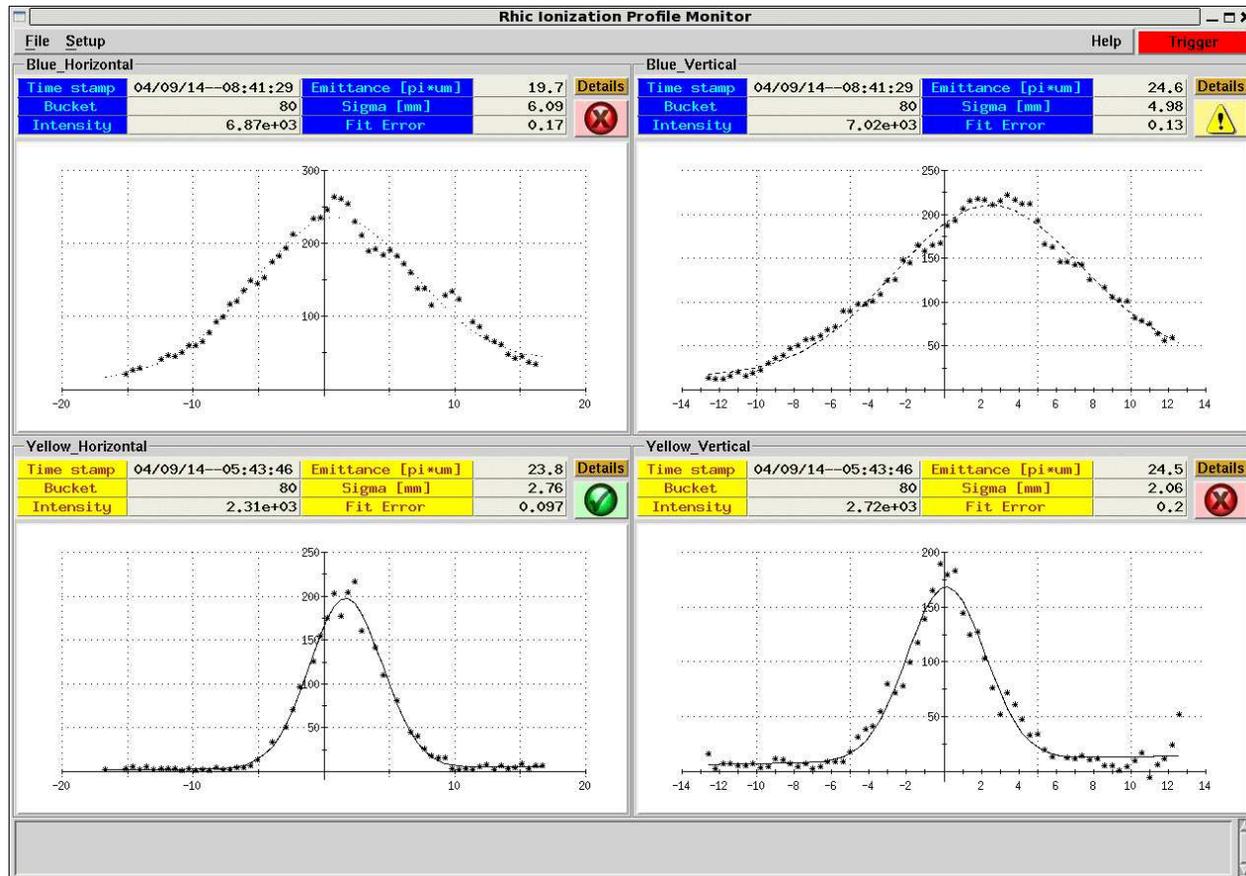
.17/.13



.13/.12



.09/.08



## Summary

- Measured beam profiles are not Gaussian in most cases, making quantitative analysis difficult
- Qualitatively, the measurement confirmed that the dynamic aperture at the low energy tune (.17/.13) is worse than at other tunes, especially .13/.12, which had been used at other low energies
- Measurement is quick; can and should be repeated parasitically to other APEX studies