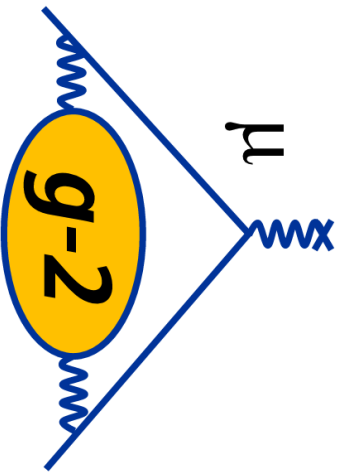
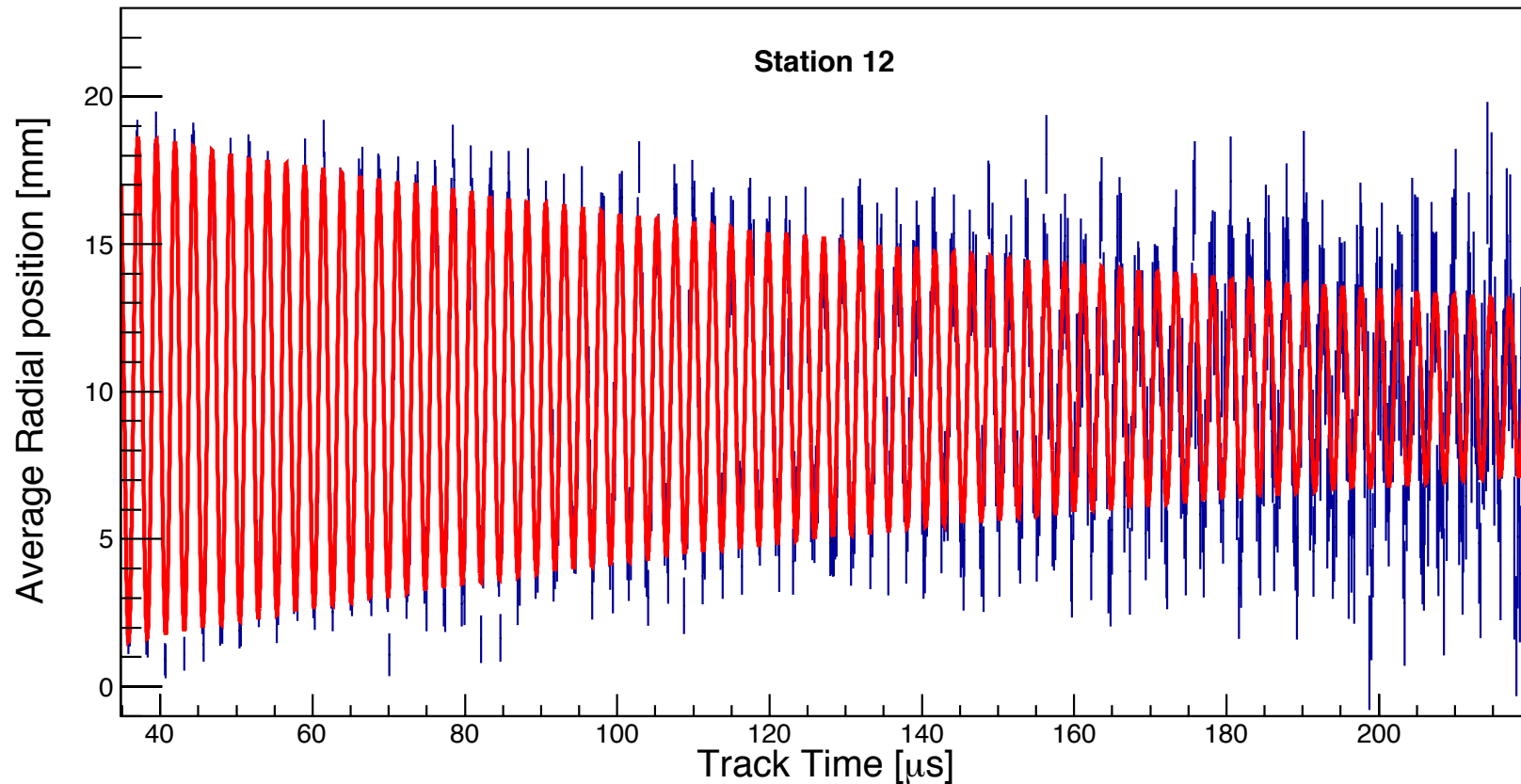


CBO from st. Patricks day run

Joe Price

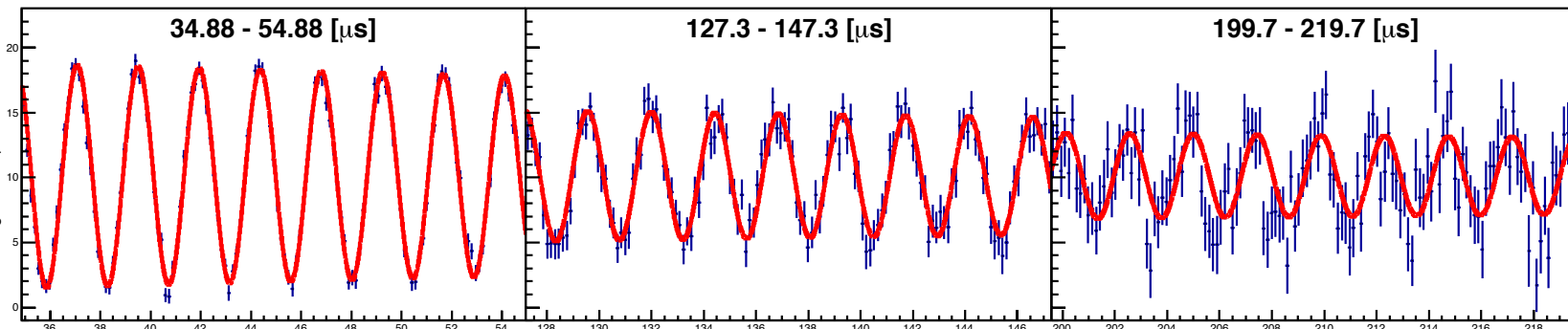


Constant frequency - s12



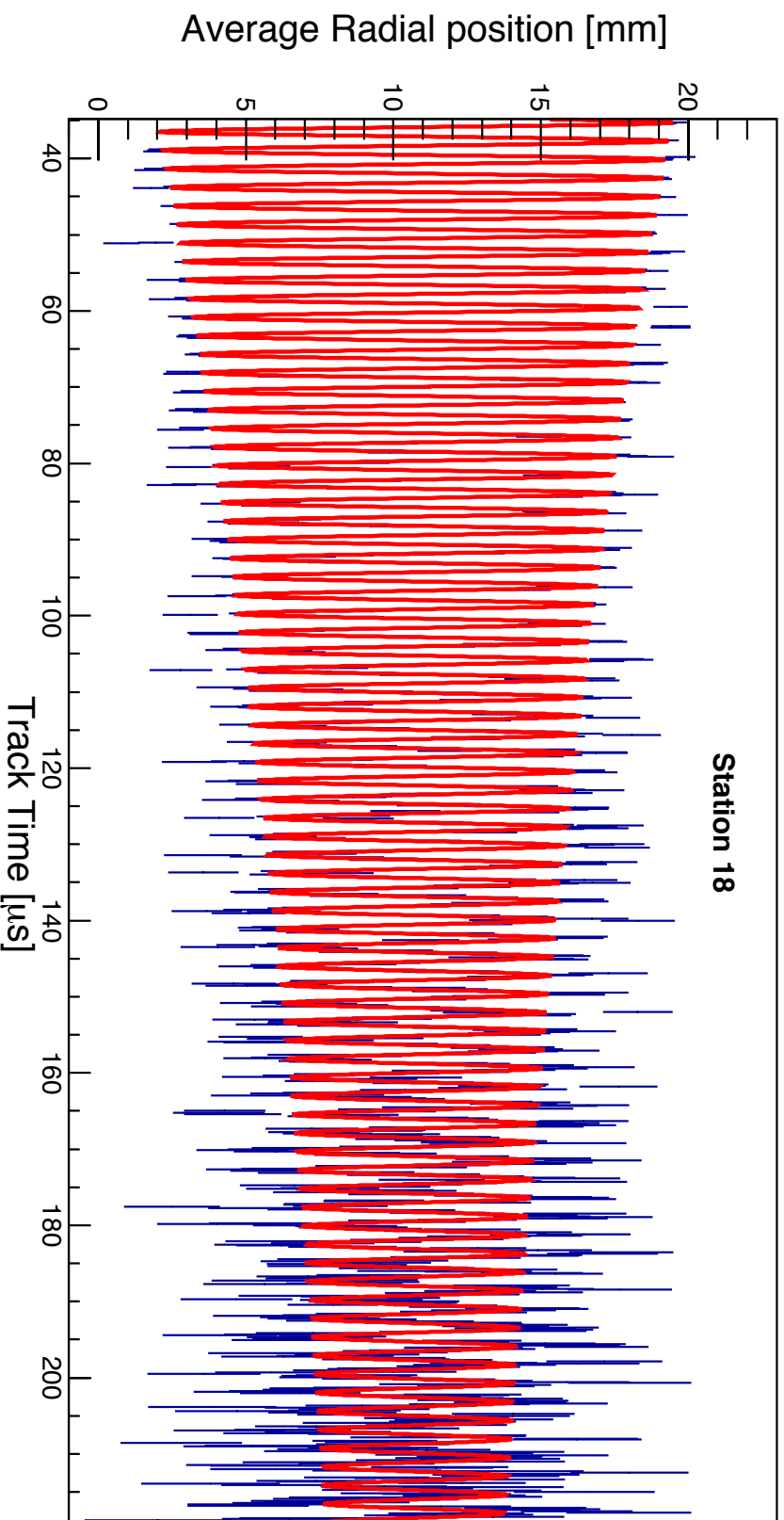
fit sin wave with
exponentially
decaying
amplitude

$$\tau_{\text{CBO}}: 173 \pm 5 \mu\text{s}$$



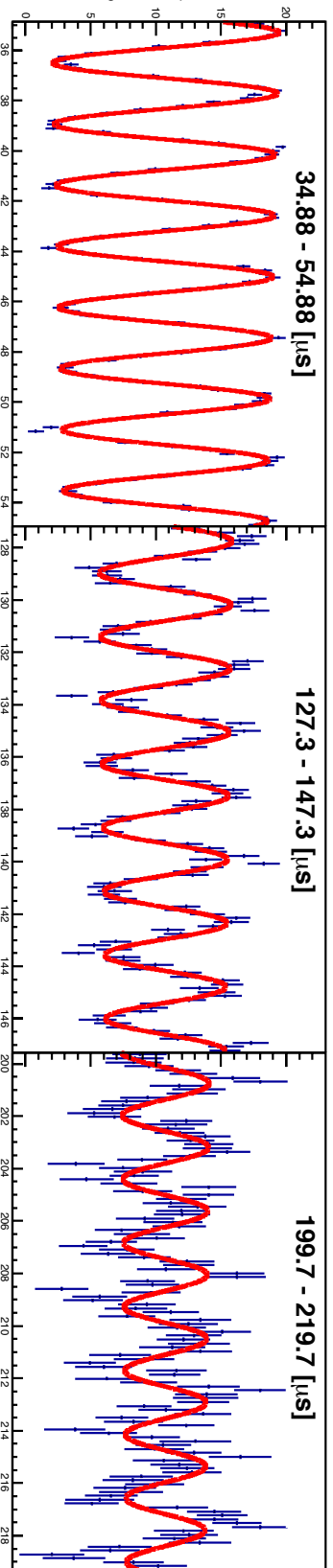
fits clearly
not as good
at late
times

Constant frequency - s18



fit sin wave with
exponentially
decaying
amplitude

$T_{CBO}: 174 \pm 5 \text{ us}$



fits clearly
not as good
at late
times

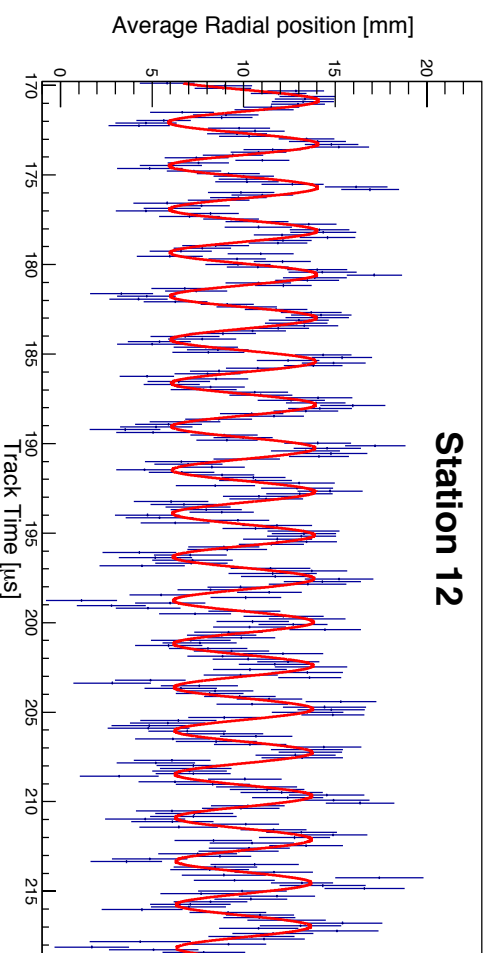
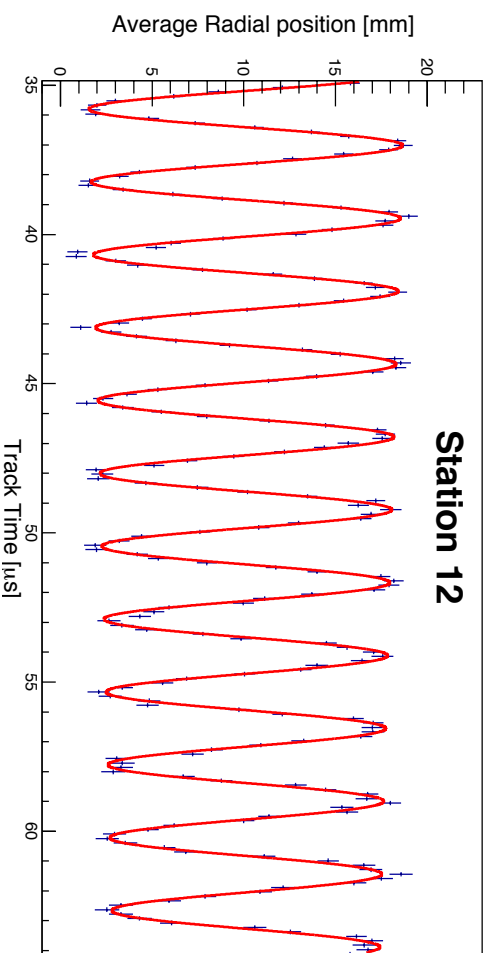
Frequency shift

- Fit early and late times separately to quantify shift in ω

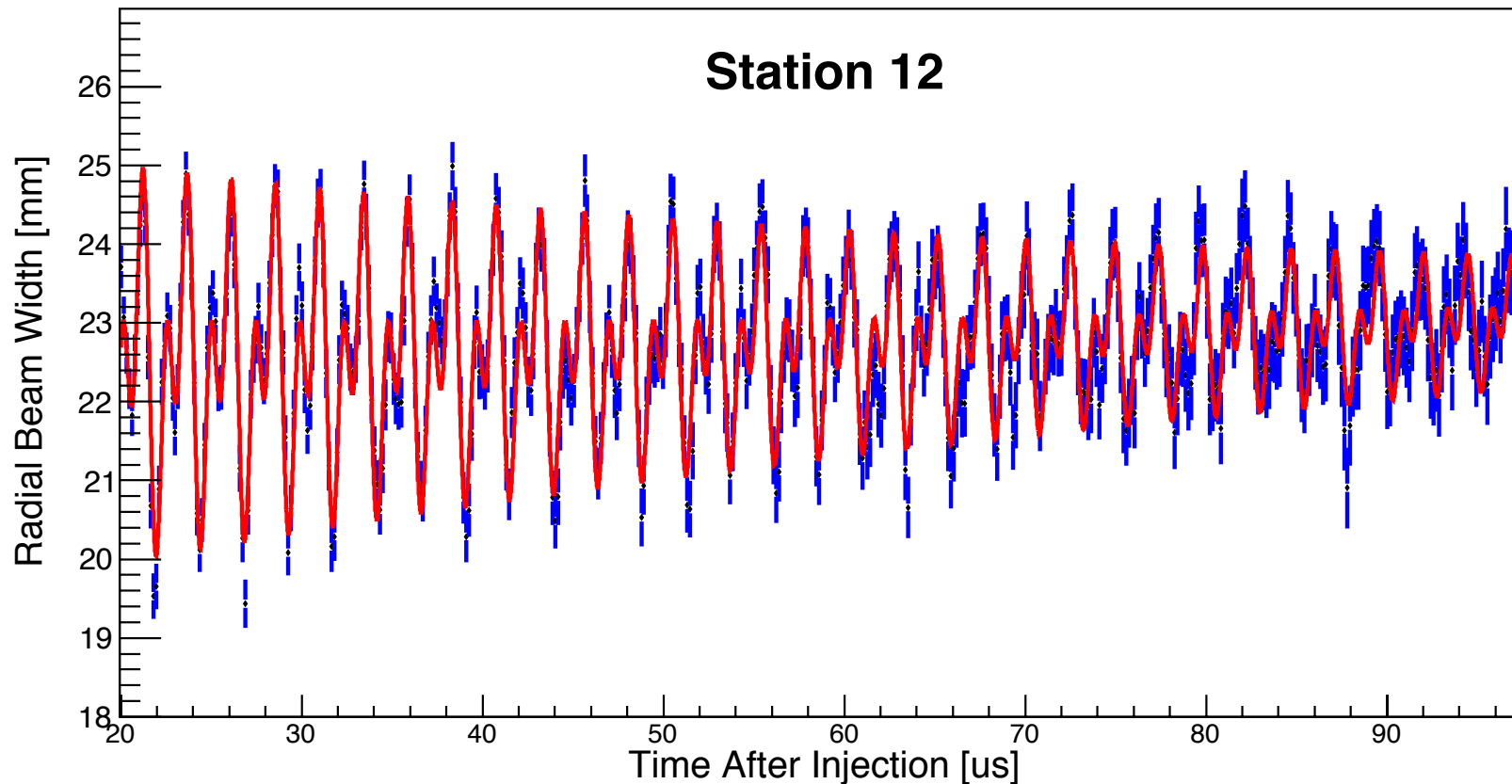
- Early fit (35 - 65 μs):
- 12: $\omega_{\text{CBO}} = 409.5 \text{ kHz}$
- 18: $\omega_{\text{CBO}} = 409.6 \text{ kHz}$

- Late Fit (170 - 220 μs)
- 12: $\omega_{\text{CBO}} = 412.0 \text{ kHz}$
- 18: $\omega_{\text{CBO}} = 412.8 \text{ kHz}$

- Corresponds to roughly a 2.5kHz shift over 150 μs

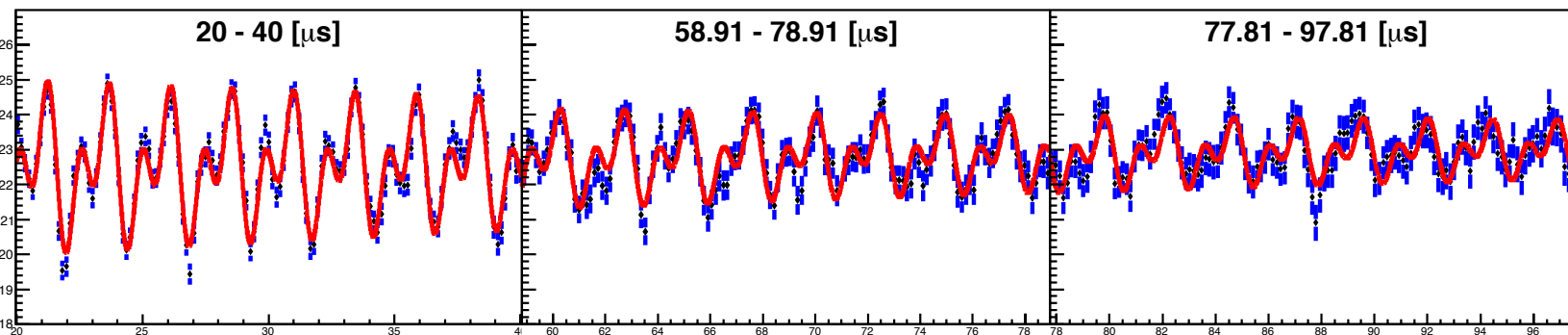


Width s12



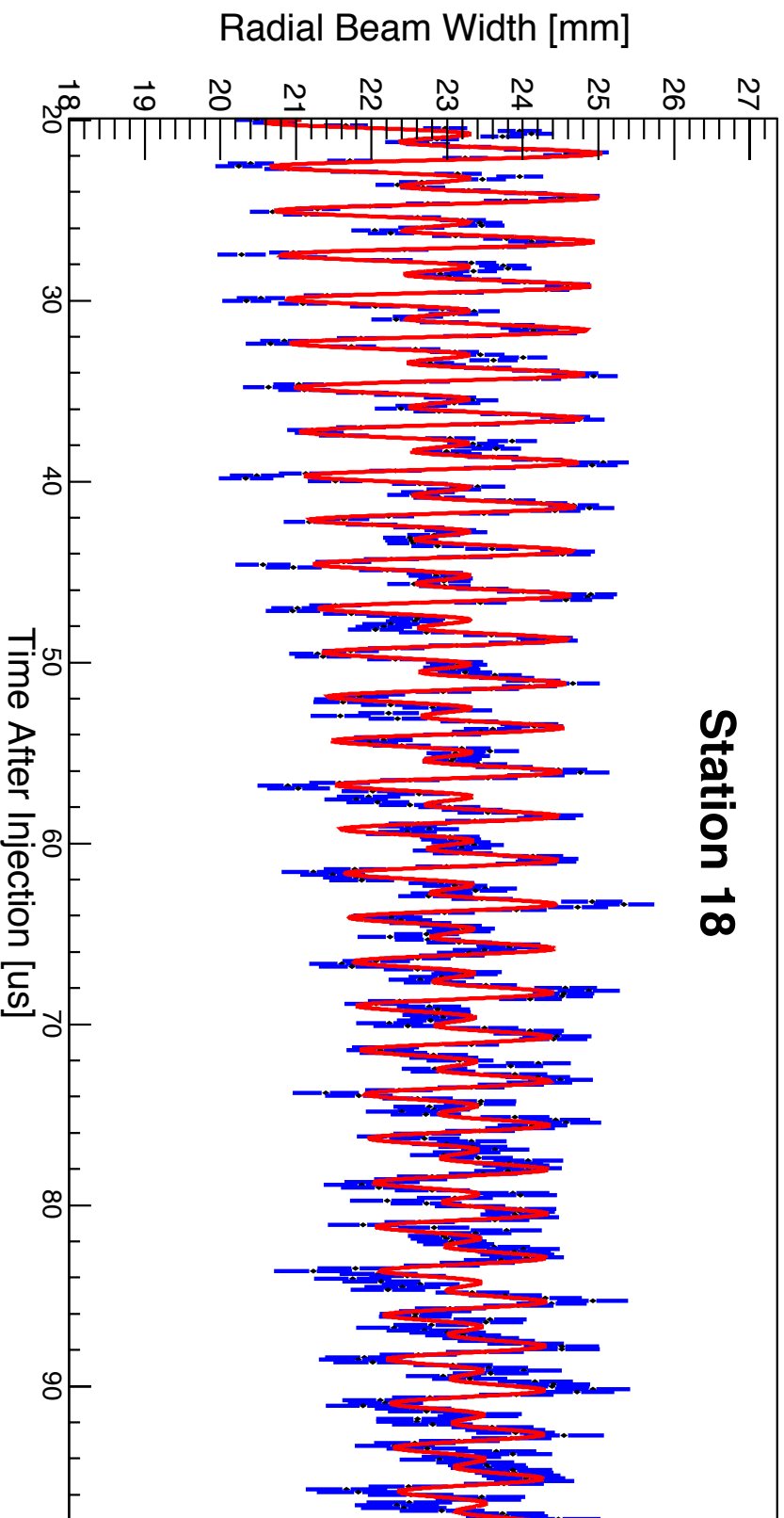
Fit difference
between 2
sine waves
with
exponentially
decaying
amplitude,
and varying
ratio

ratio = 0.99



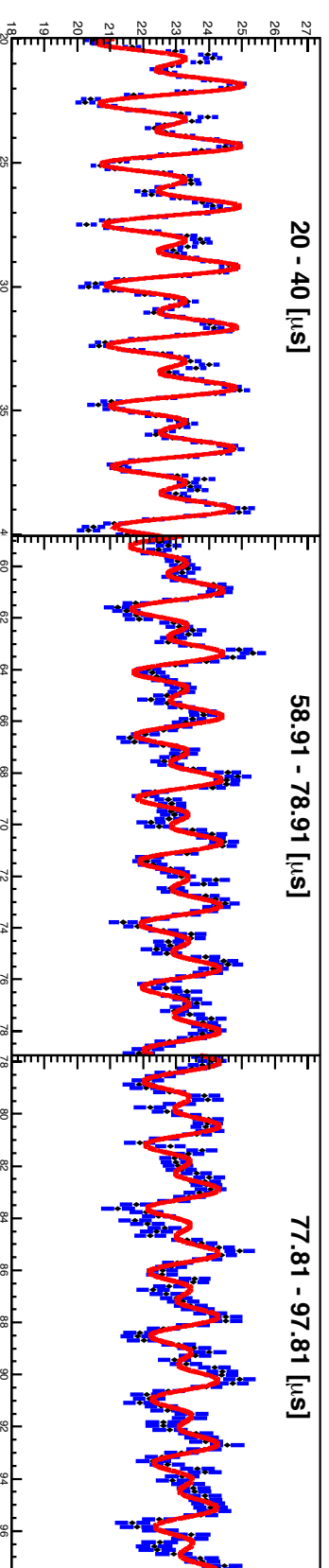
evidence of
frequency
shift here also

Width s18



Fit difference
between 2
sine waves
with
exponentially
decaying
amplitude,
and varying
ratio

ratio = 1.01



evidence of
frequency
shift here also

CBO decoherence

Parameter	station 12	station 18
t CBO average radial position	173 +/- 5 us	174 +/- 5 us
t CBO Width	71 +/- 15 us	88 +/- 15 us

- Fits for width clearly not as good but at least approximately correct
- Early indication that the width falls away faster than the average radial position
- Ratio between different frequencies for width ~1.0