

Motivation

- ALS-U requires that commissioning be completed in a few months
- Turn-by-turn BPMs allow the ability to measure certain machine properties such as tunes and phase advances with very few turns
- Being able to measure these machine properties with very few turns will reduce the time it takes for lattice calibration during commissioning

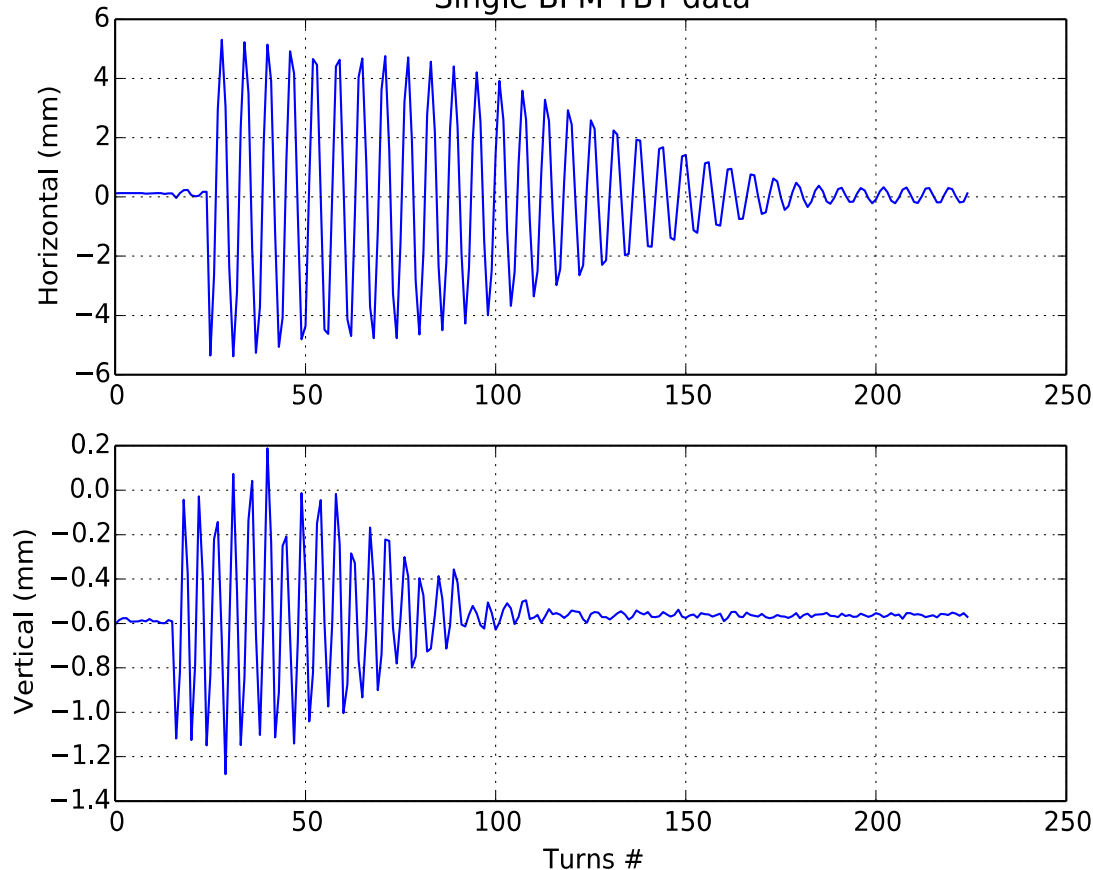
BPMs & ALS parameters

- 43 state of the art turn-by-turn (TbT) BPMs were installed in the ALS storage ring last year
- Plans to install ~160 BPMs across the ALS storage ring, booster ring, and linac line later this year
- BPMs provide TbT data to single digit micron resolutions

Lattice	TBA
Energy range / GeV	1.9
Circumference / m	196.8
Tunes hor./ver.	9.18 / 16.25
Beam size in straights (rms) hor./ver. / μm	251 / 8
Emittance hor./ver. / nm-rad	2 / 0.04
electron beam current (multibunch) / mA	500

Mixed BPM tune measurement

Single BPM TBT data



- Single turn pinger magnet kick in both transverse planes
- Used 8 bunches, 2mA current in each bunch

Mixed BPM tune measurement

- TbT data from 43 BPMs used together with NAFF to measure tune

