

## **Brief Description of the Videos**

**tune\_s:** Tune evolution and vertical displacement of a slice of bunch 45 of the 2<sup>nd</sup> batch in run 49. The bunch is unstable featuring intense oscillations and significant tune spread and shift.

**tune:** Faster version of tune\_s

**rms:** Tune evolution, rms displacement, and instantaneous motion of bunch 45 of the 2<sup>nd</sup> batch in run 49.

**centroid:** Vertical displacement of the centroid and the corresponding FFT. Bunch 45 of 2<sup>nd</sup> batch in run 49.

**Video1:** Tune evolution and RMS of the vertical displacement (motion of slices respect to the centroid) of bunch 47 of the 2<sup>nd</sup> batch for run 51. The bunch is unstable. The RMS value is high, intense oscillations, and significant tune shift. Notice the bunch wide oscillation around the peak of the RMS value. (behavior similar to the RMS.avi movie)

**Video2:** Comparison of tune evolutions of bunch 45 and 47 of the 2<sup>nd</sup> batch for run 51. Notice the similarities of both evolutions.

**Video3:** (The data was taken at unknown time after the injection). Tune evolution and RMS of the vertical displacement of bunch 47 of the 2<sup>nd</sup> batch for run 48. The bunch is unstable. The RMS value is high, intense oscillations, and significant tune shift. Notice a different evolution pattern of this bunch from the ones in later runs (Whose digitization started at the injection).

**Video4:** Tune evolution and RMS of the vertical displacement of bunch 5 of the 2<sup>nd</sup> batch for run 51. The bunch is stable. The RMS value is low, little oscillations, and no tune shift.

**Video5:** Tune evolution and RMS of the vertical displacement of bunch 47 of the 1<sup>st</sup> batch for run 51. The bunch is stable. The RMS value is low, little oscillations, and no tune shift.

**Video6:** Tune evolution and RMS of the vertical displacement of bunch 47 of the 2<sup>nd</sup> batch for run 53. This run has high chromaticity (.2). The bunch is apparently stable. The RMS value is low, little oscillation, and brief, small tune shift. Notice the difference for similar bunch in the second batch in runs with low chromaticity.