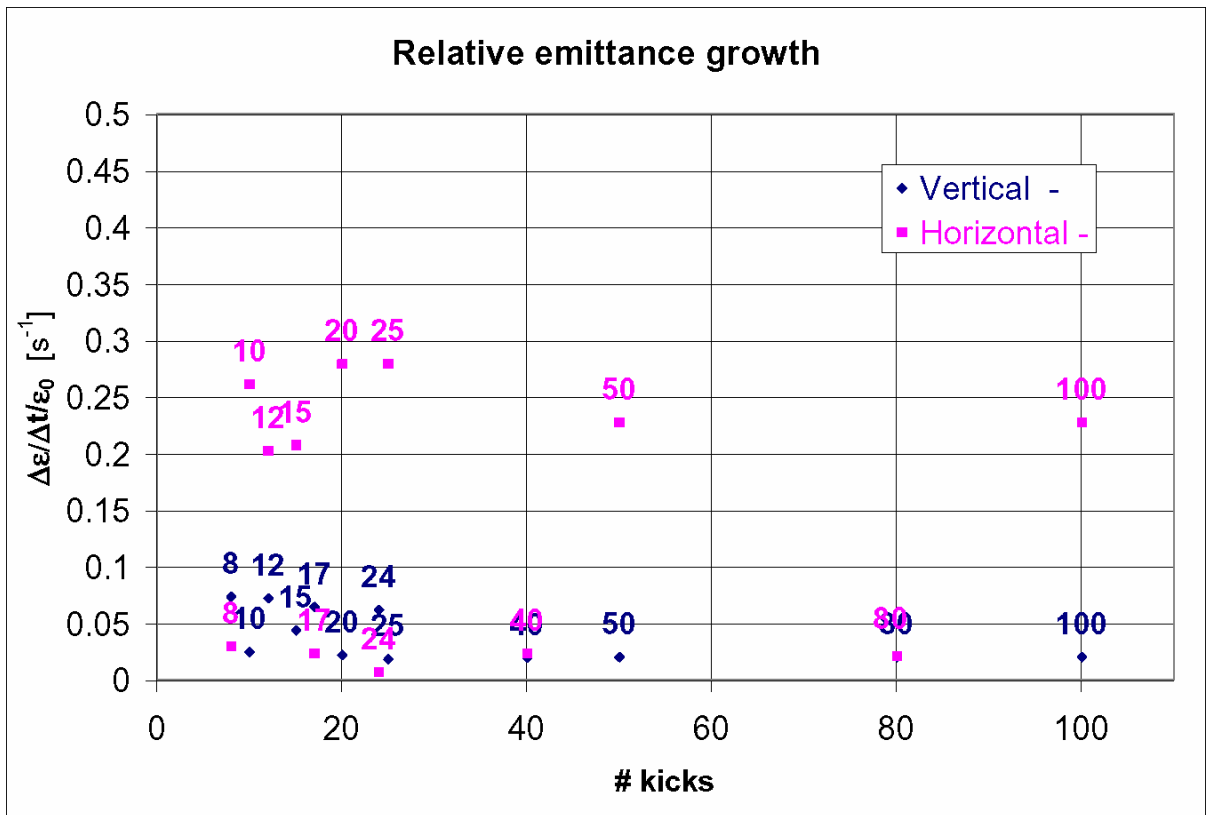


# Reminder:

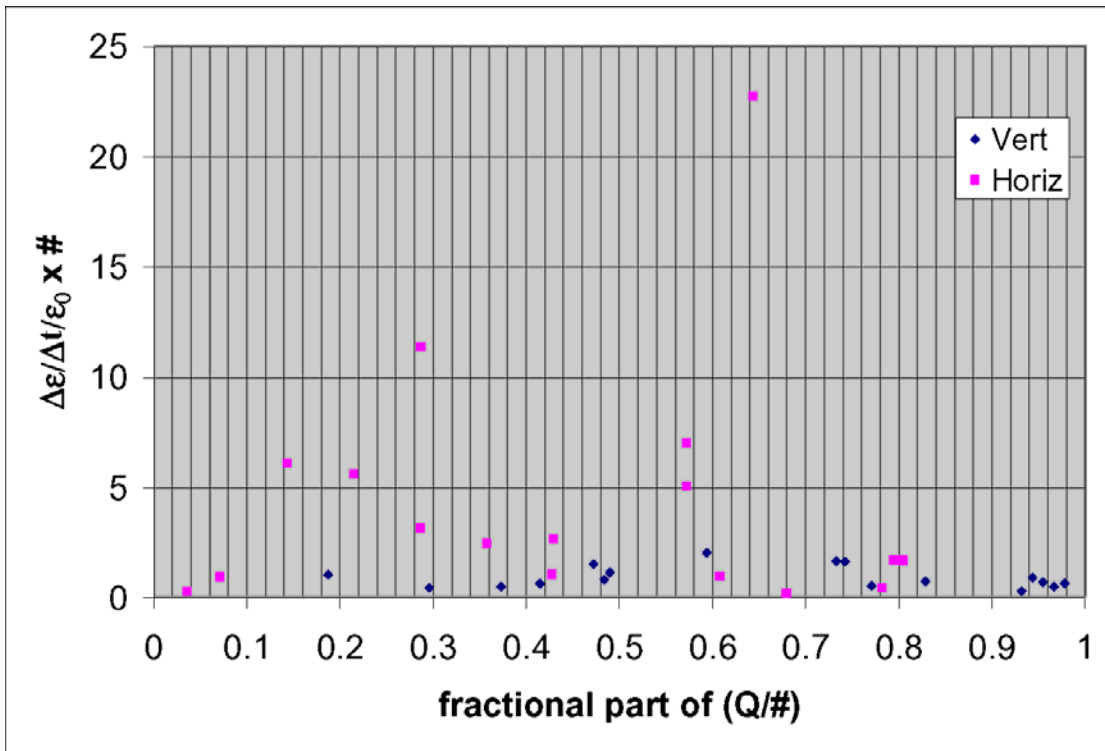
- LHC at injection
- electron cloud density =  $2 \times 10^{11} \text{ m}^{-3}$
- $Q' = 2 \rightarrow$  BELOW threshold of fast instability
- persisting term of **slow emittance growth**

Plot of the relative emittance growth rate vs. # kicks



There is not a clear pattern...

...When we set the # of Points of Interaction around the ring, in fact we are CHANGING the **EFFECTIVE phase advance** between the kicks and the strength of the kick itself

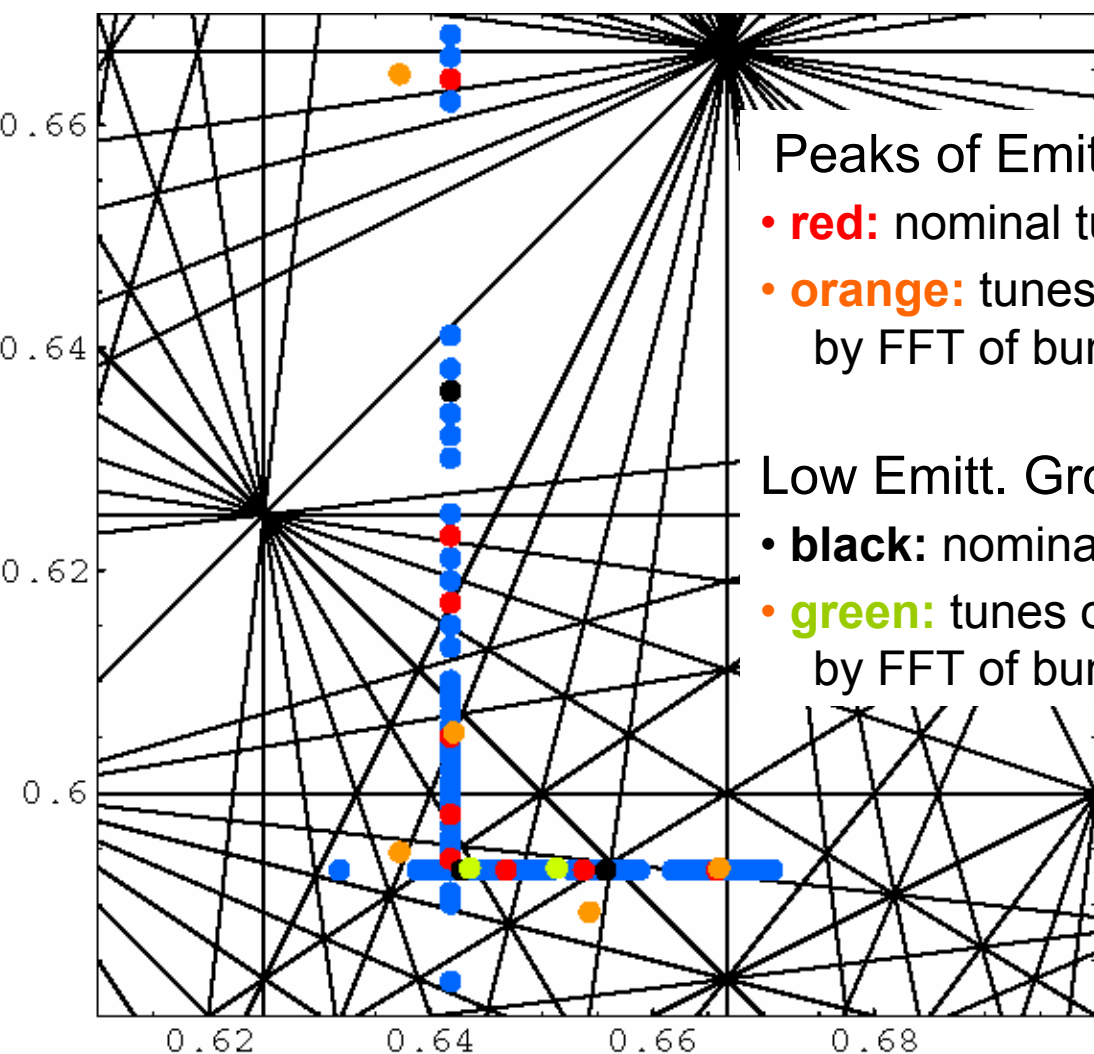
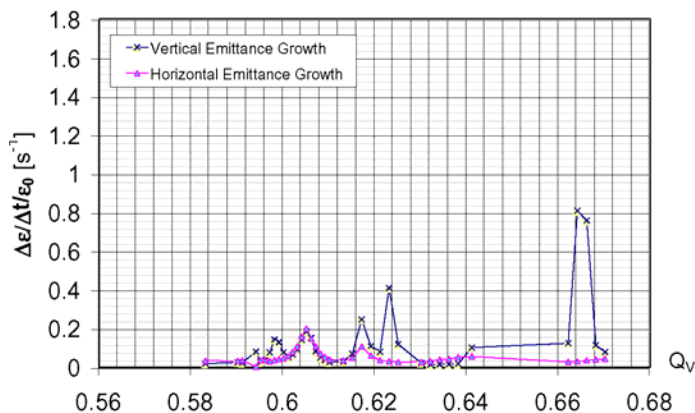
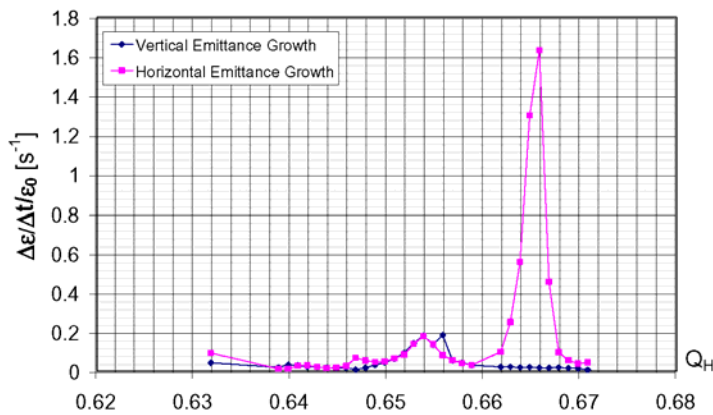


The plot of the emittance growth rate vs. the fractional part of the **tune divided by the # of kicks** show possibility of resonances.

# Tune scan: ( $\rho = 2 \cdot 10^{11} \text{ m}^{-3}$ ; 1 kick/turn)

$Q_h = 0.6318, \dots, 0.6708$ ;

$Q_v = 0.5931, \dots, 0.6701$



Peaks of Emitt. Growth:

- **red**: nominal tunes
- **orange**: tunes obtained by FFT of bunch centroid

Low Emitt. Growth points:

- **black**: nominal tunes
- **green**: tunes obtained by FFT of bunch centroid

# Plot the working point and the resonances lines excited (up to 5<sup>th</sup> order)

Giuliano Franchetti's suggestion

