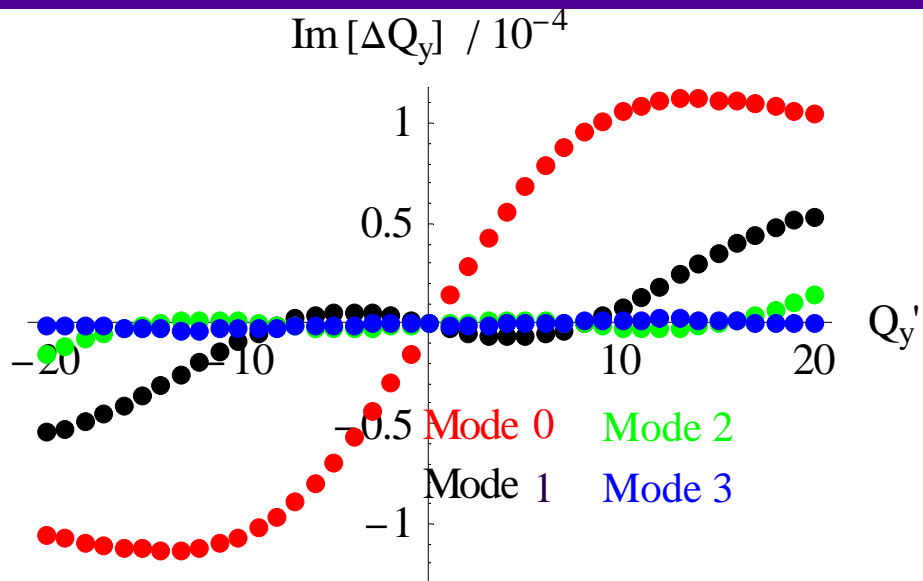
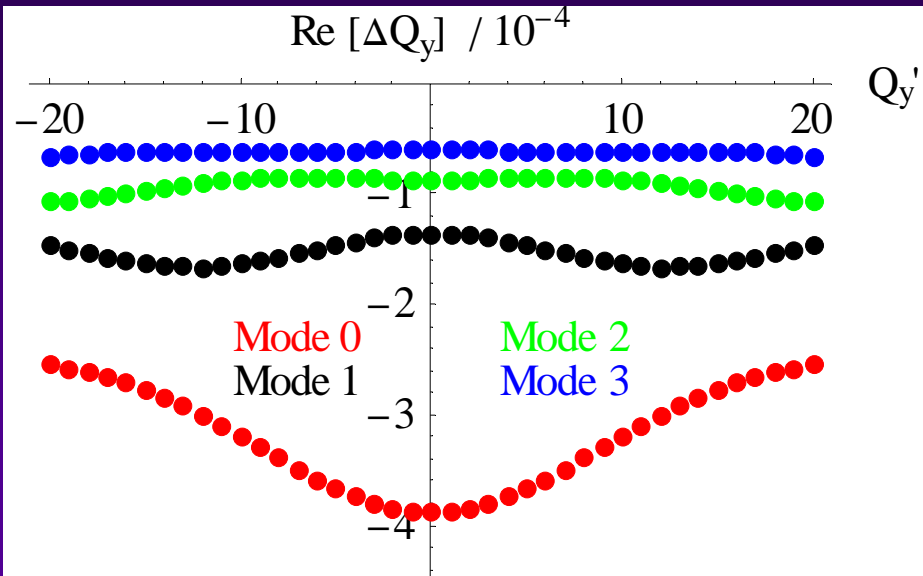


SINGLE-BUNCH AND COUPLED-BUNCH INSTABILITY AT LHC INJECTION VS. CHROMATICITY (2)

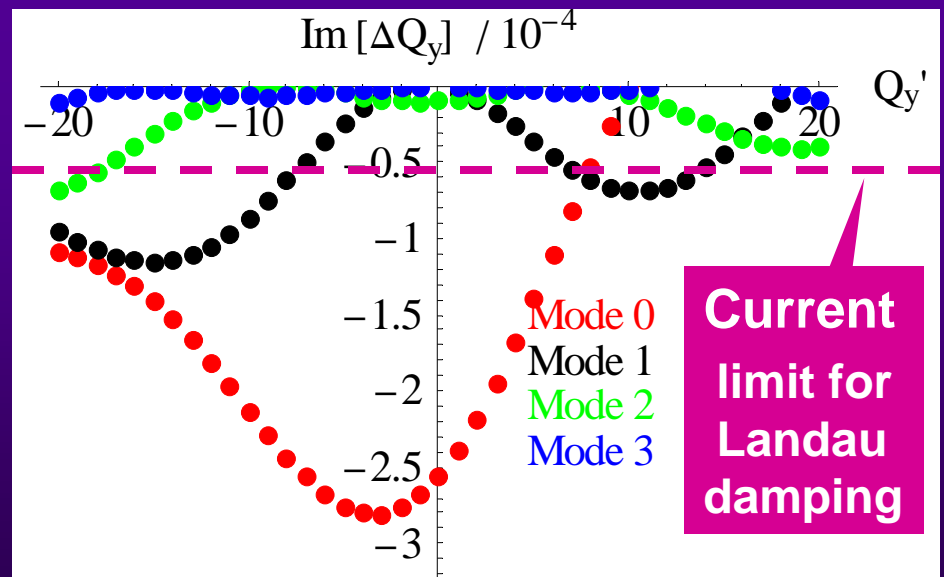
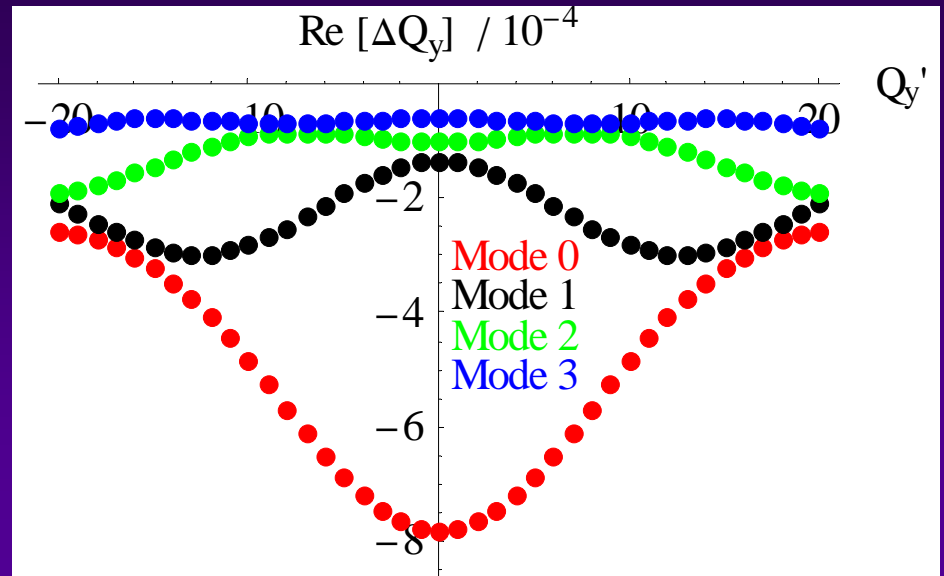
E. Métral

- ◆ **Same assumptions as on 17/06/05**

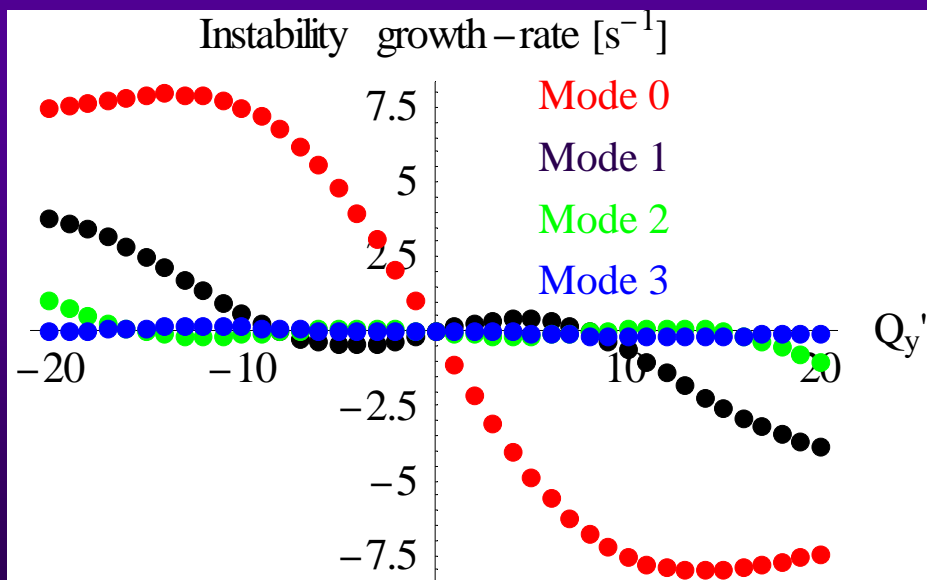
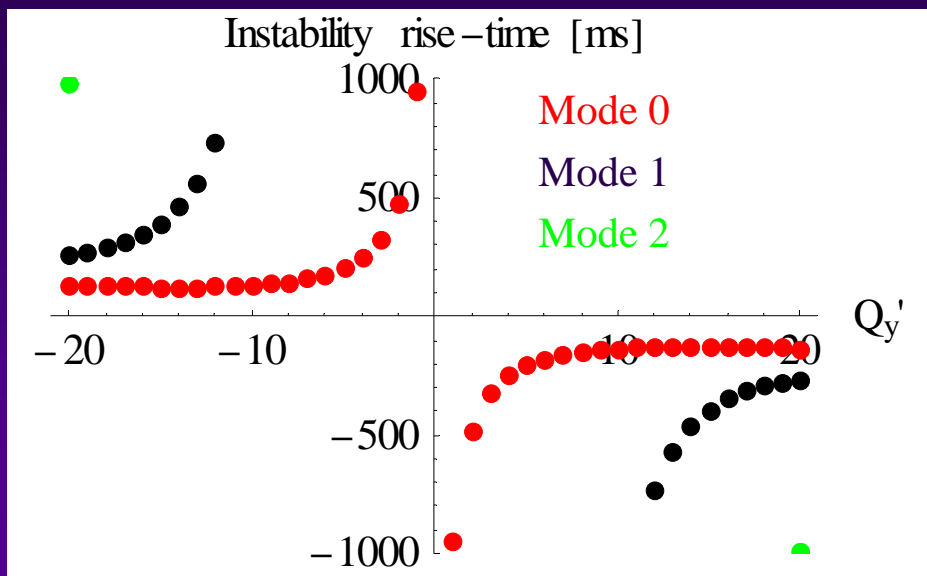
Single-bunch



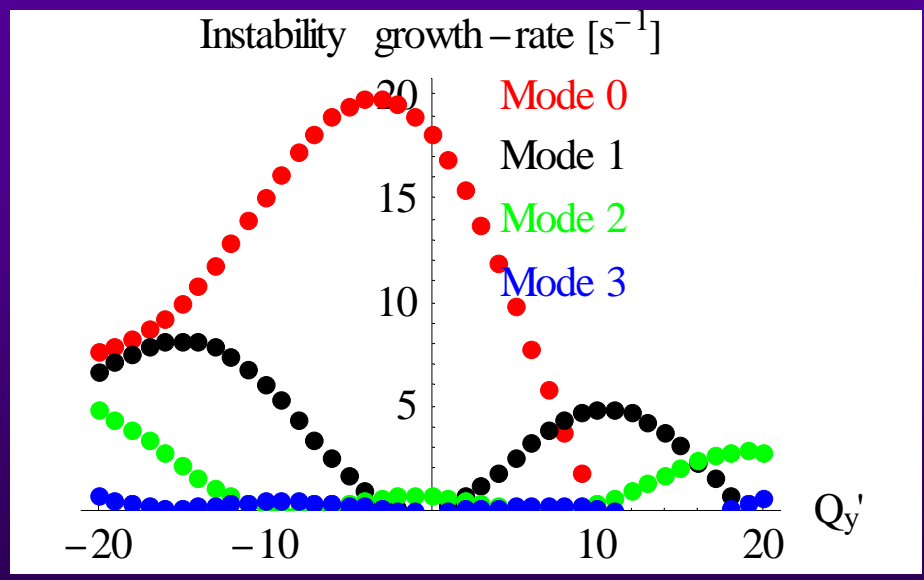
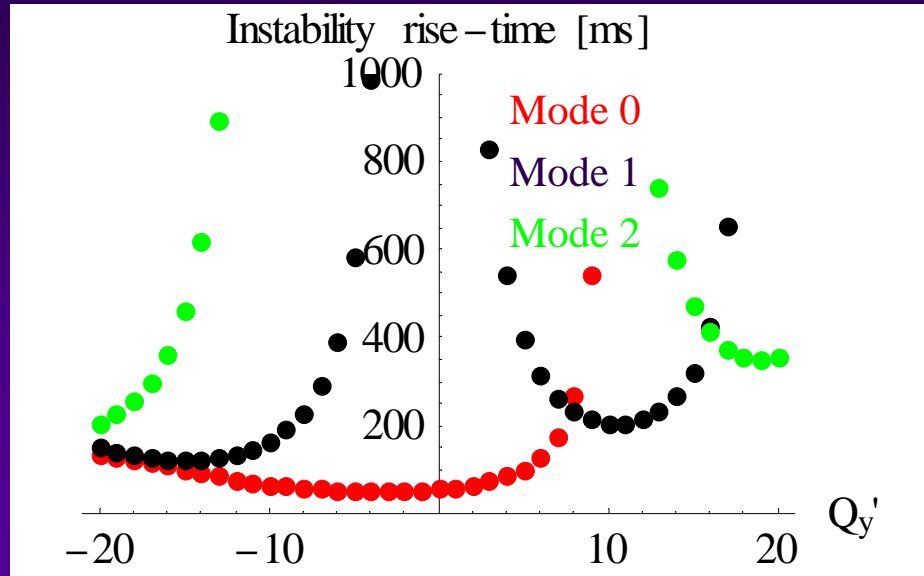
Coupled-bunch



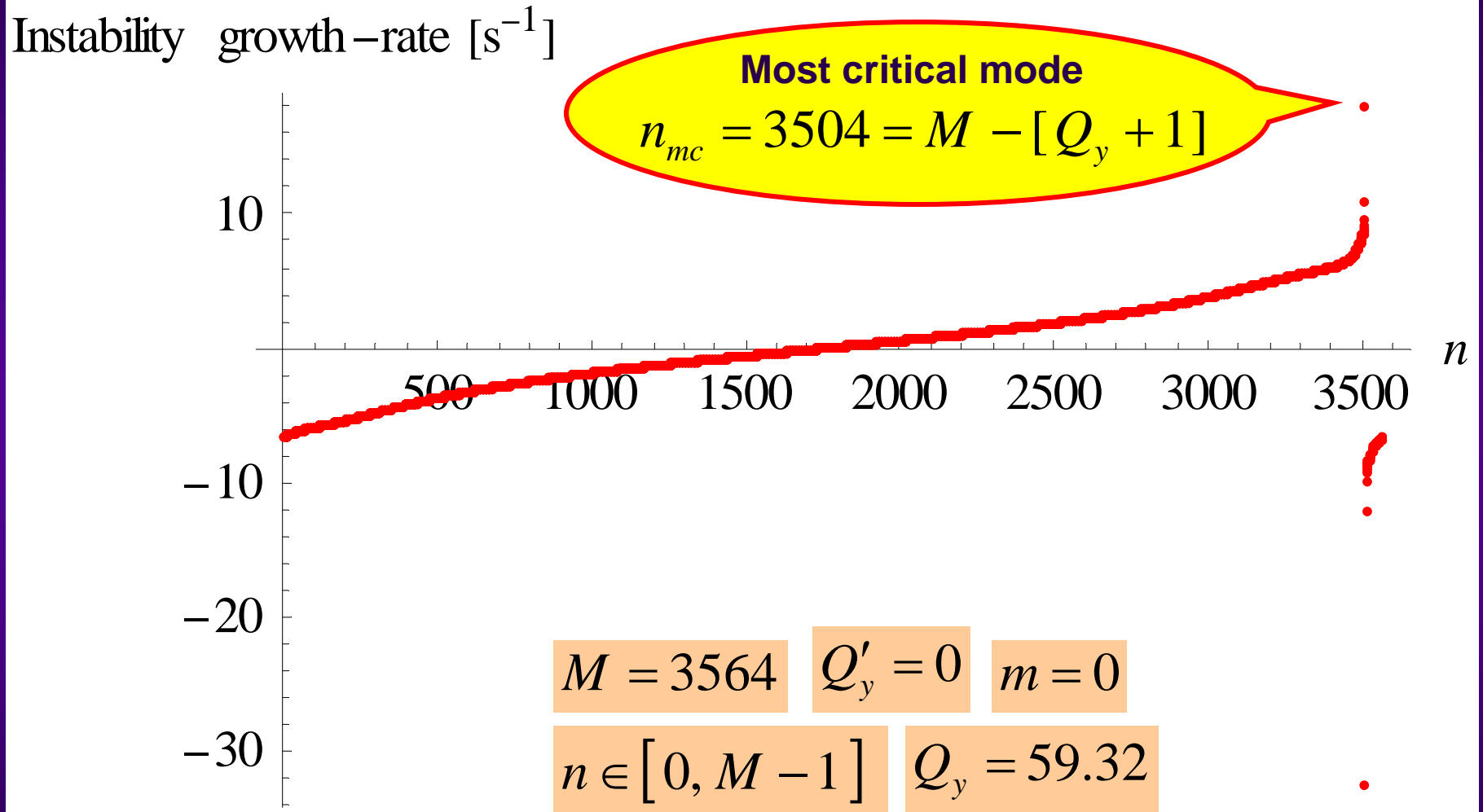
Single-bunch



Coupled-bunch



Coupled-bunch instability growth-rates vs. coupled-bunch mode n



CONCLUSION (1/2)

- ◆ If we could slightly increase the amount of amplitude detuning (by ~ 30%), the beam should be stable even with very large positive chromaticity !
 - These results could also perhaps explain qualitatively why in the SPS no unstable head-tail modes are observed up to chromaticities of $Q'=30$ (as pointed out by FZ during the last RLC meeting) \Rightarrow This could be carefully checked quantitatively
 - High chromaticities are also good for the fast instability due to the e^- cloud

CONCLUSION (2/2)

- ◆ **HOWEVER**, the resistive-wall impedance is underestimated \Rightarrow **We need to really put all the relevant sources before concluding !**
- ◆ **Landau damping also depends on the real part of the coherent tune shift... (here only the real part due to the impedance is given...)**