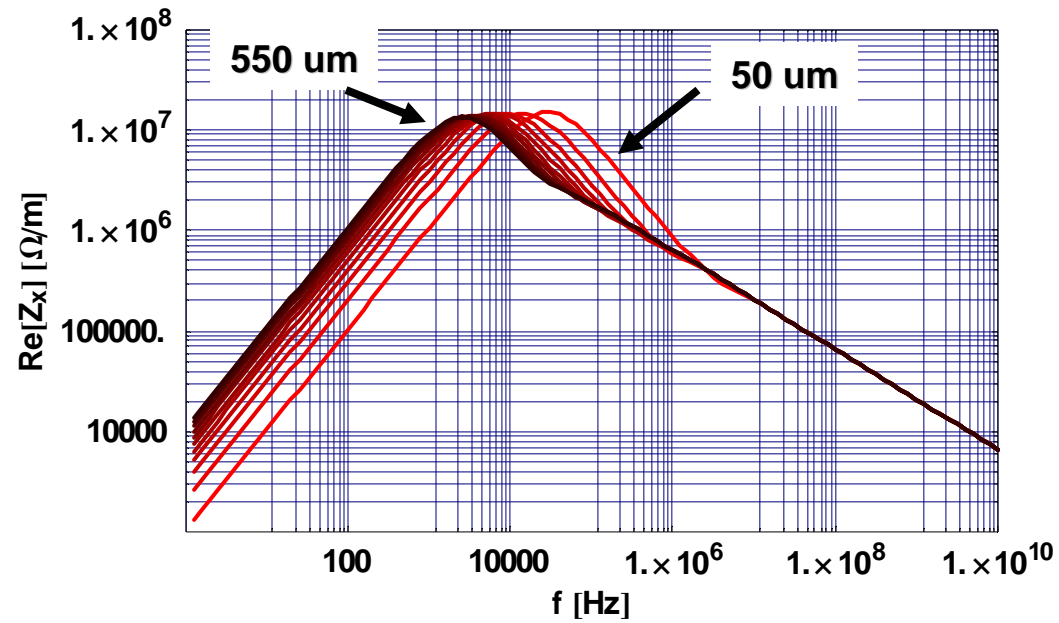


FP420 detector – Resistive wall effect on coupled-bunch instability

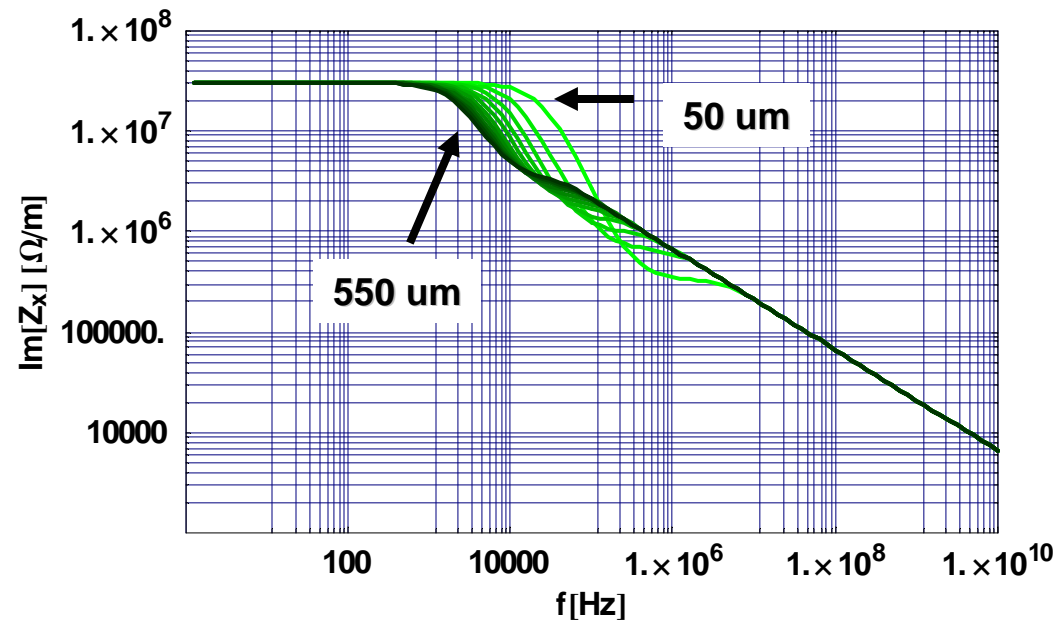
- **Input parameters:**
 - 8 m long detector
 - Scan of Cu layer thickness from 50 to 550 μm
 - Stability diagram based on:
 - Particle distribution with nominal LHC transverse emittance (3.75 μm RMS, normalized)
 - Landau damping due to the maximum octupole strength available in LHC at 7 TeV
- **Analysis results shown as:**
 - Real and imaginary part of the transverse impedance as function of frequency and Cu layer thickness
 - Rise Time of the most critic coupled-bunch mode
 - Real and imaginary part of the coherent tune shift as function of Cu layer thickness
 - Resulting tune shift plotted on stability diagram

Transverse Impedance as function of frequency and Cu thickness

Real Part

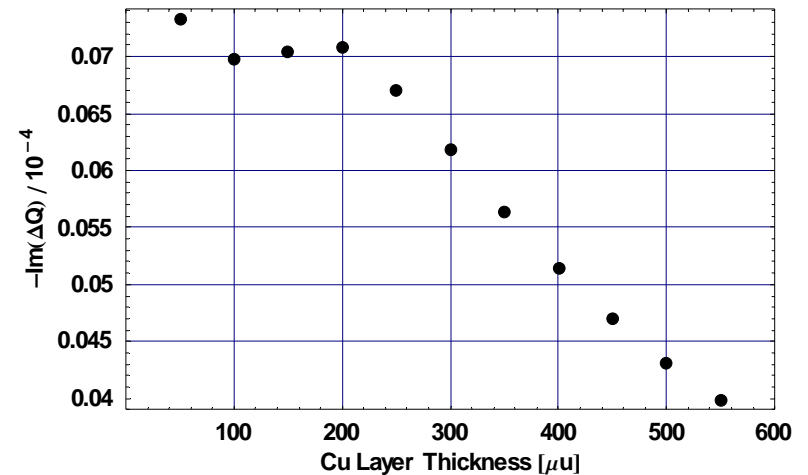
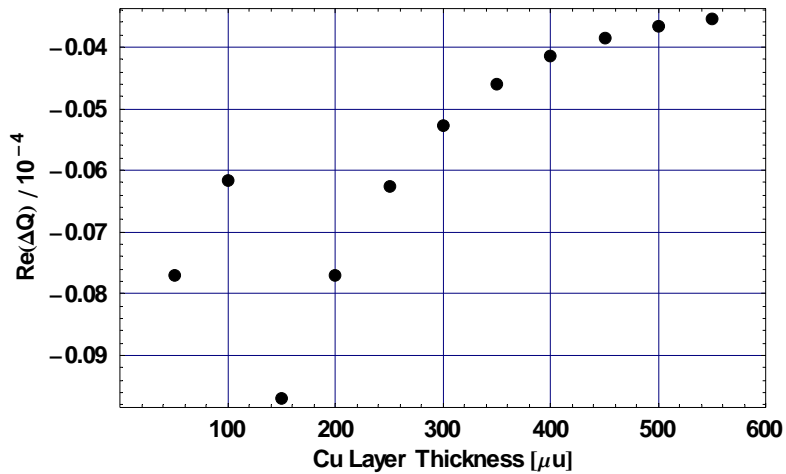
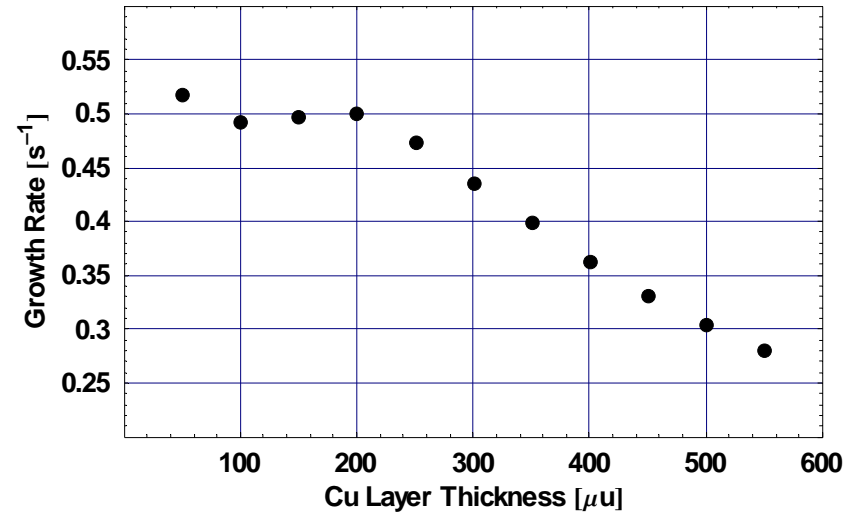


Imaginary Part

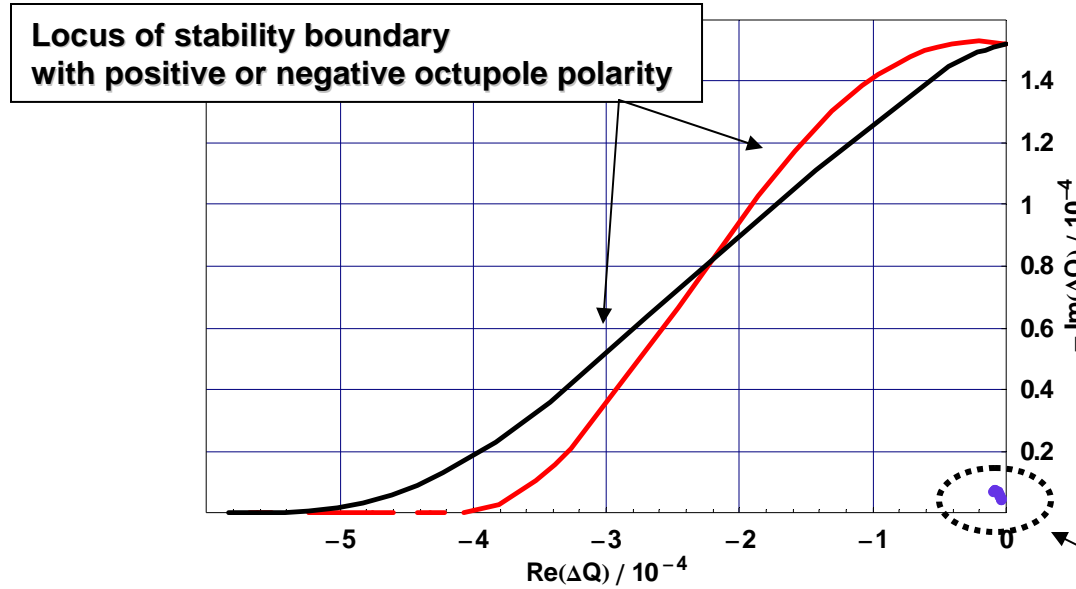


Coupled bunch instability growth rate and tune shift as function of Cu thickness

Most Critical Coupled-Bunch mode number is always #3498 or #3499



Stability Diagram



Tune shift for all the scanned Cu thicknesses:
- All points are inside the "stability region"

