Shift of Head-tail modes with an inductive impedance

D. Amorim with N. Biancacci, K. Li, E. Métal, B. Salvant

• Follow-up the previous results presented in 86th meeting (22/08/2016)

• DELPHI simulations with a broadband resonator impedance model,
  • $R_s = 10 \, M\Omega/m$, $f_{res} = 10^{15} \, Hz$, $Q = 1$

• Previous results where for a Gaussian distribution

• New results with a uniform distribution
DELPHI simulations (Gaussian), EM results (uniform)

- Black: EM eigenvalues, uniform distribution
- Red: DELPHI results, Gaussian distribution
DELPHI simulations (uniform), EM results (uniform)

- Black: EM eigenvalues, uniform distribution
- Red: DELPHI results, approached uniform distribution
Excellent agreement for the largest modes +2, +1, -2 and -3.

Good agreement for the largest mode 0 and -1 until

\[ \frac{\Delta Q_{coh}}{Q_s} \approx 2 \]

Modes 0, -1 and -2 entangle at \( \frac{\Delta Q_{coh}}{Q_s} \approx 2 \)

Discrepancies observed for these modes for \( \frac{\Delta Q_{coh}}{Q_s} \geq 2 \)
Conclusion and next steps

• Good overall agreement between DELPHI (uniform), and EM eigenvalues (uniform)

• Uniform distribution in DELPHI improved significantly the results compared to the Gaussian distribution

• Next: finer intensity scan with DELPHI
• Use a steeper uniform distribution model
• Implement an approximation of the airbag beam in DELPHI