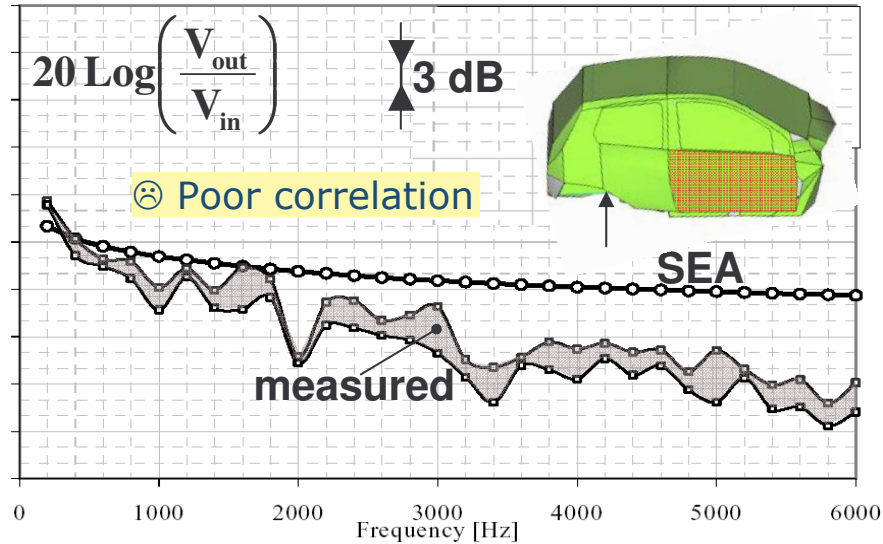
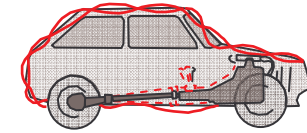
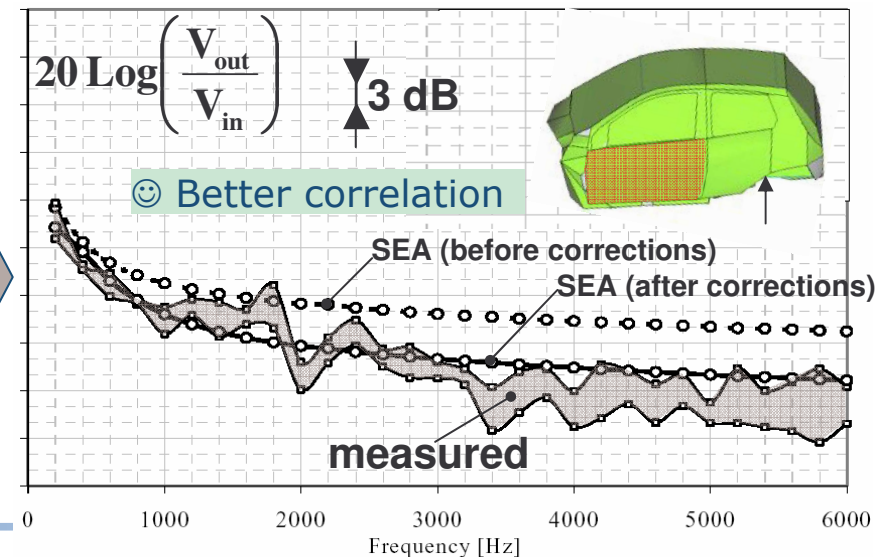


Structural response: experimental-numerical correlation



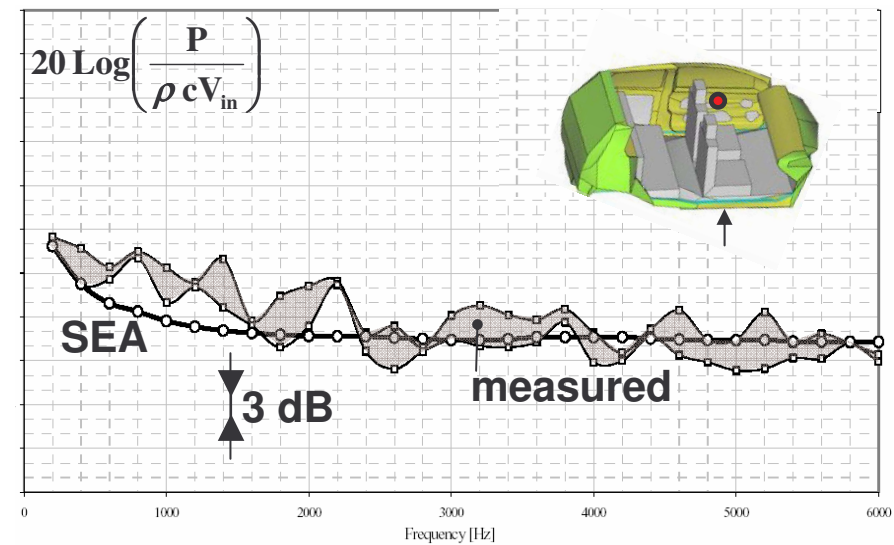
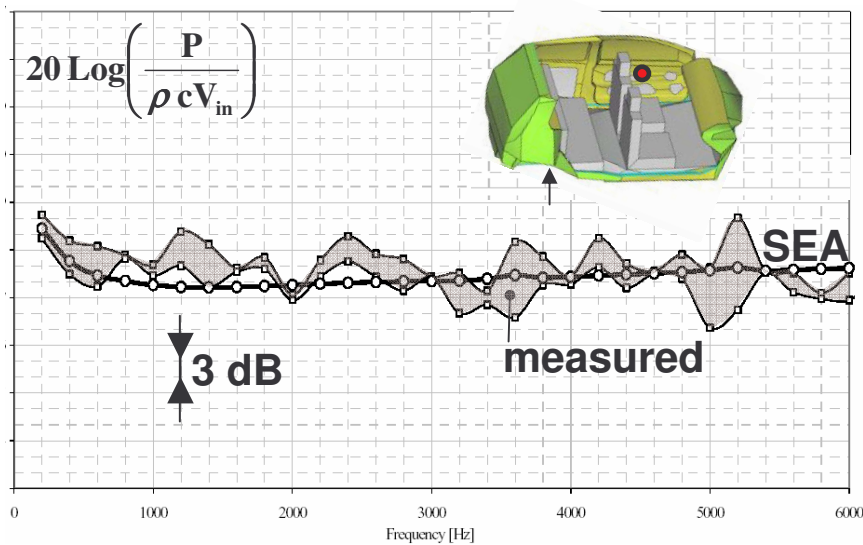
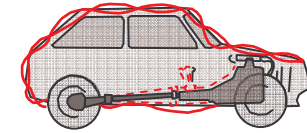
Model enhancements:

1. Measurement of internal loss factors for passenger compartment and car glasses
2. Model of the reverberation room surrounding the vehicle
3. Acoustic power radiated by the shaker
4. Better simulation of structural junctions (point-rather than line-welding of the roof; point-rather than line-connections of the doors)



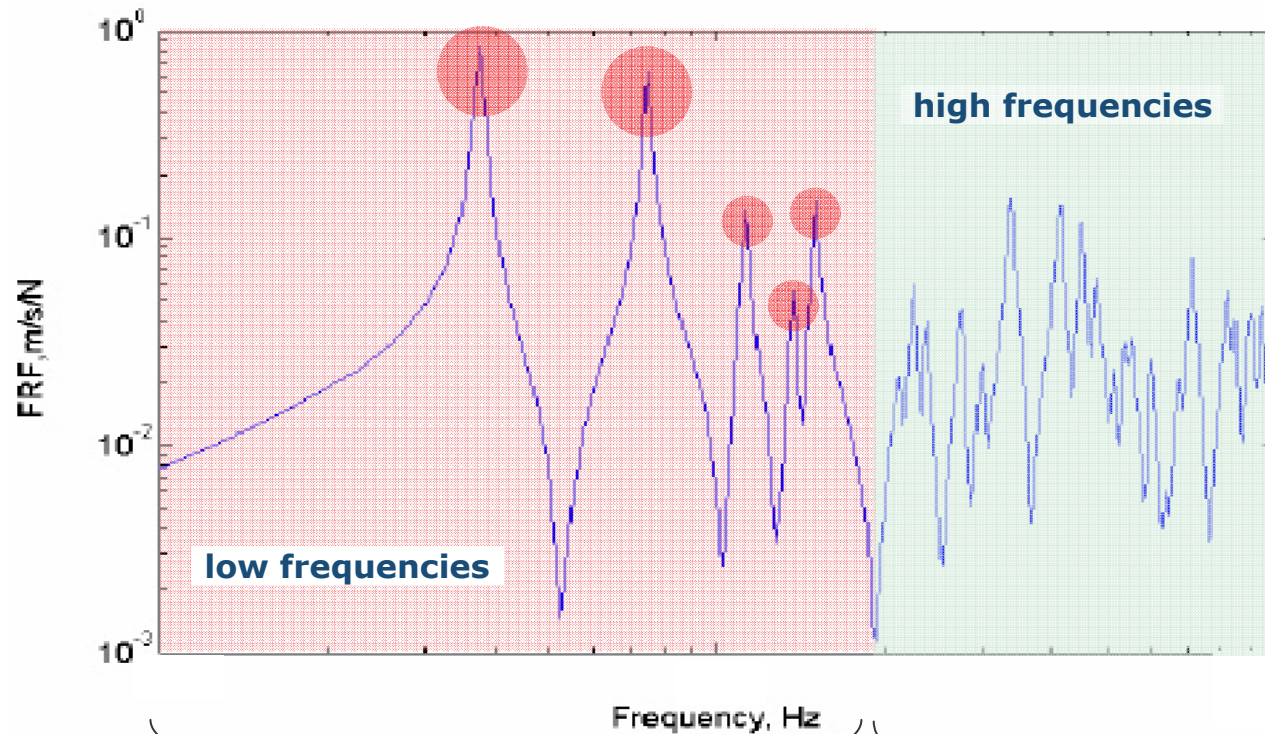


Acoustic response: experimental-numerical correlation





Measurements at low frequencies



Large modal spacing
(compared to modal bandwidth)

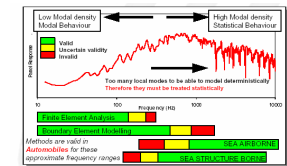


Modal deterministic
approach

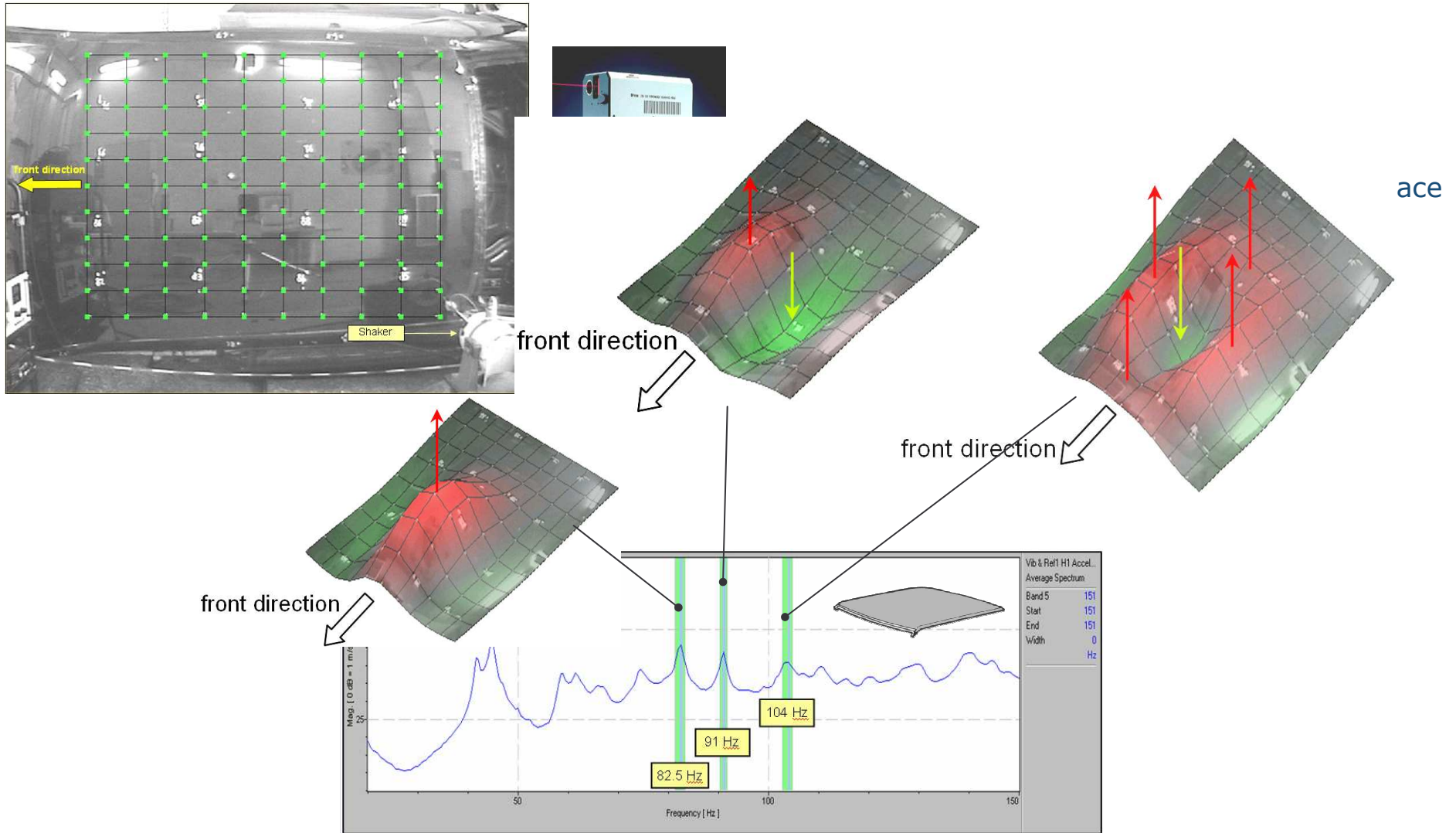
High modal overlap
hides mode peaks



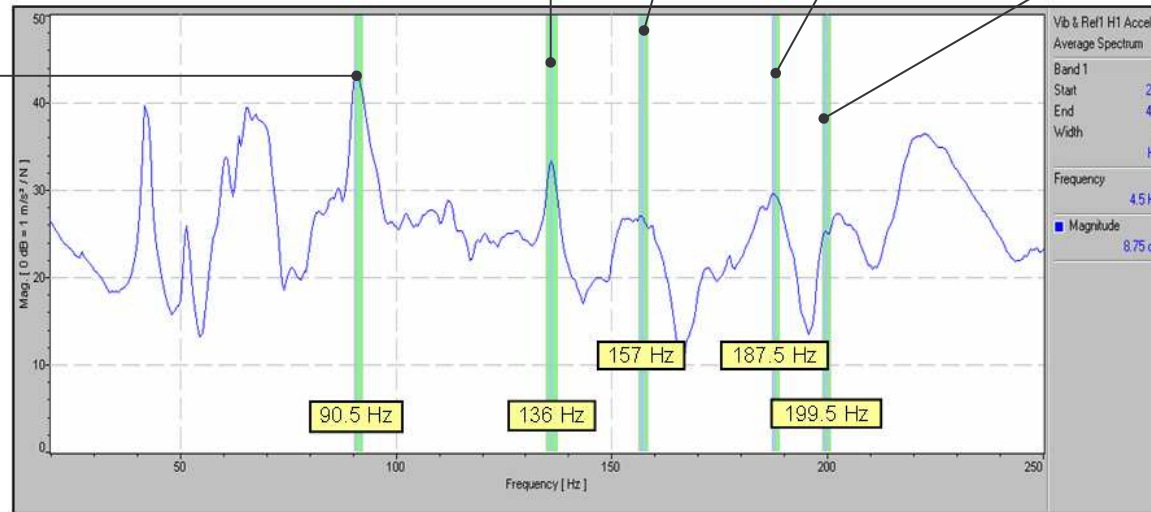
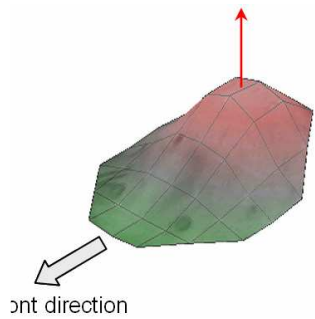
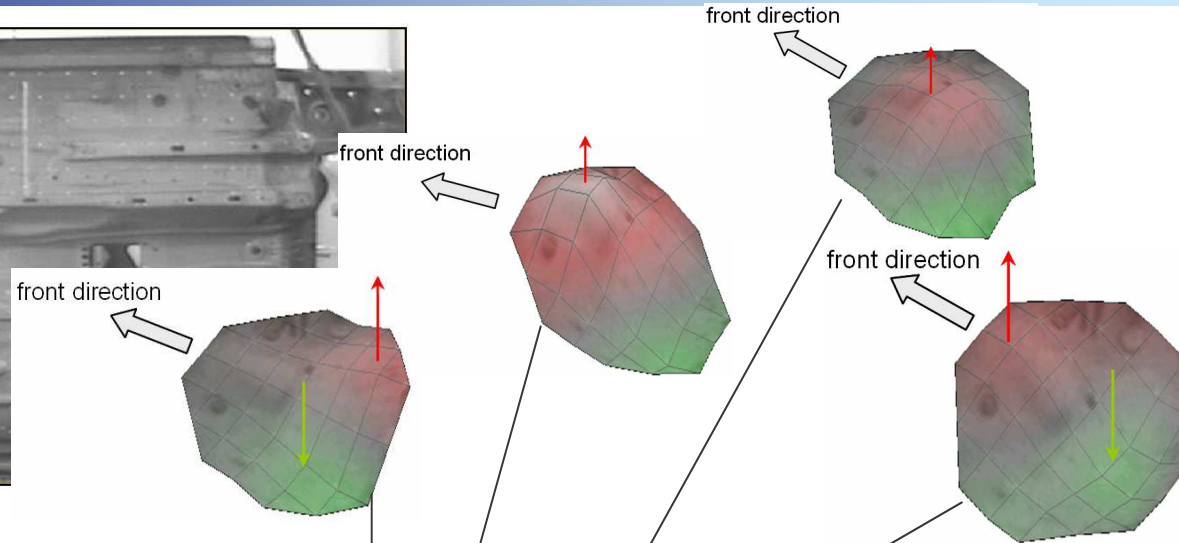
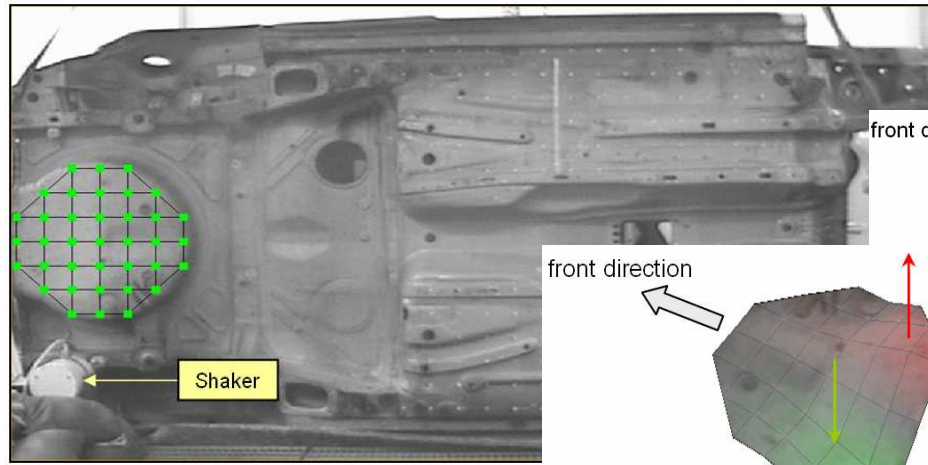
Statistical approach



Panel vibration measurements at low frequencies by laser scanner vibrometer: roof panel

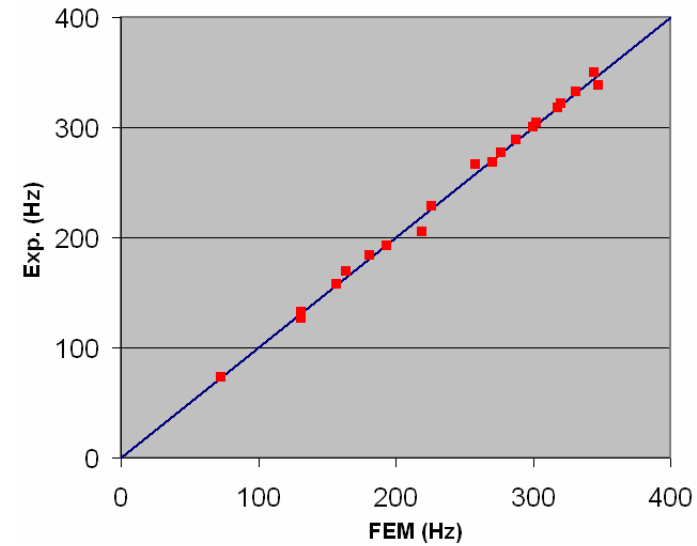
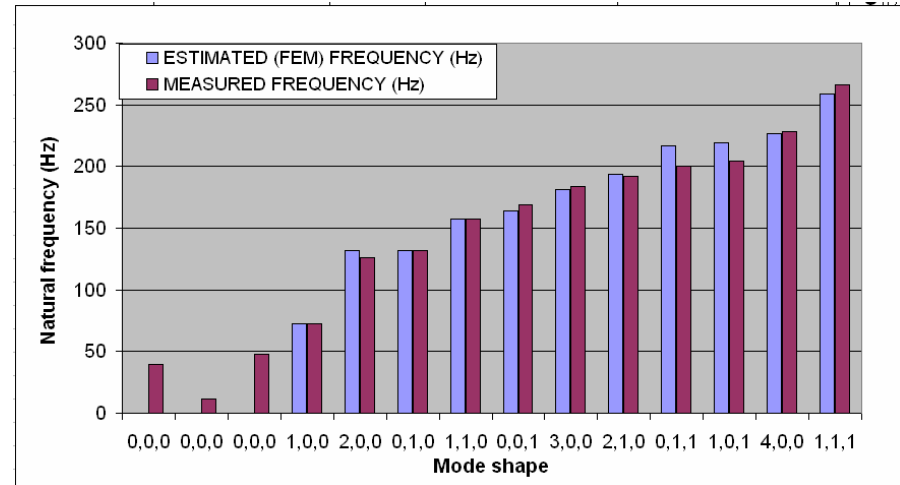
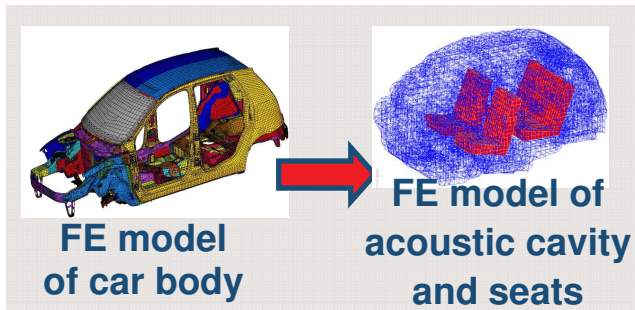


Panel vibration measurements at low frequencies by laser scanner vibrometer: spare-wheel panel

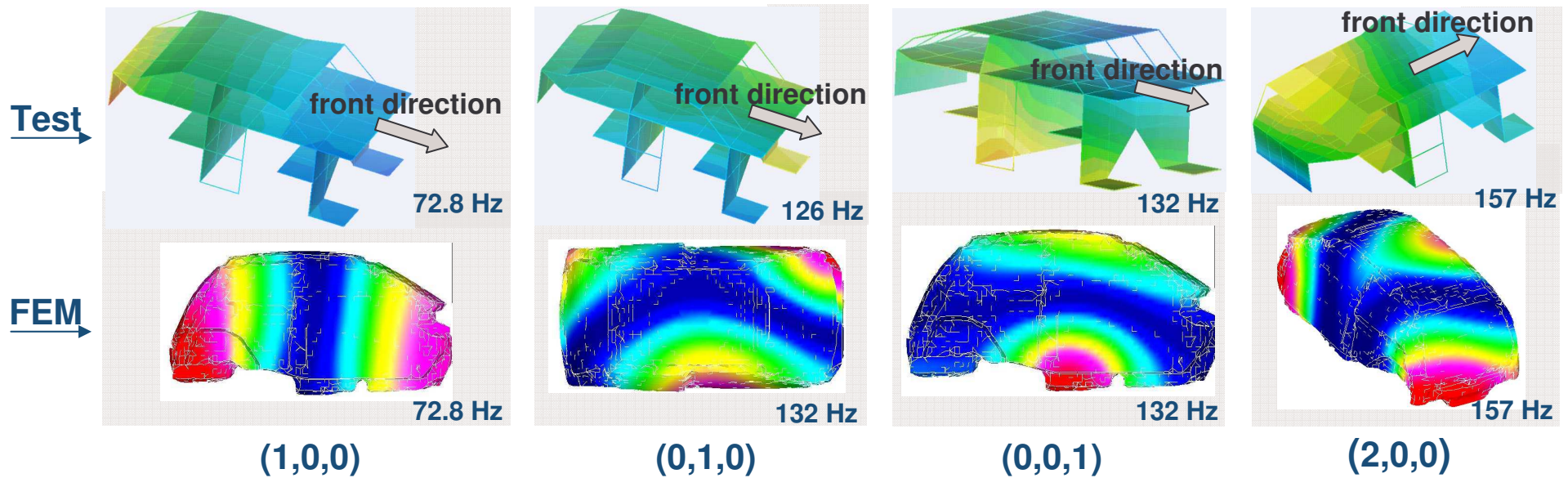


Numerical/Experimental Acoustic Modal Analysis of passenger compartment (natural frequencies)

Experimental set-up



Numerical/Experimental Acoustic Modal Analysis of passenger compartment (mode shapes)





Conclusions

- Test facilities and SEA simulation approaches employed at Elasis were presented for the following *high-frequency* acoustic phenomena:
 - Transmission Loss of a car body side
 - Structure-borne noise of a complete vehicle excited at engine and road inputs
- Some experimental modal approaches used at Elasis were briefly outlined for *low-frequency* acoustics (panel and cavity modes)