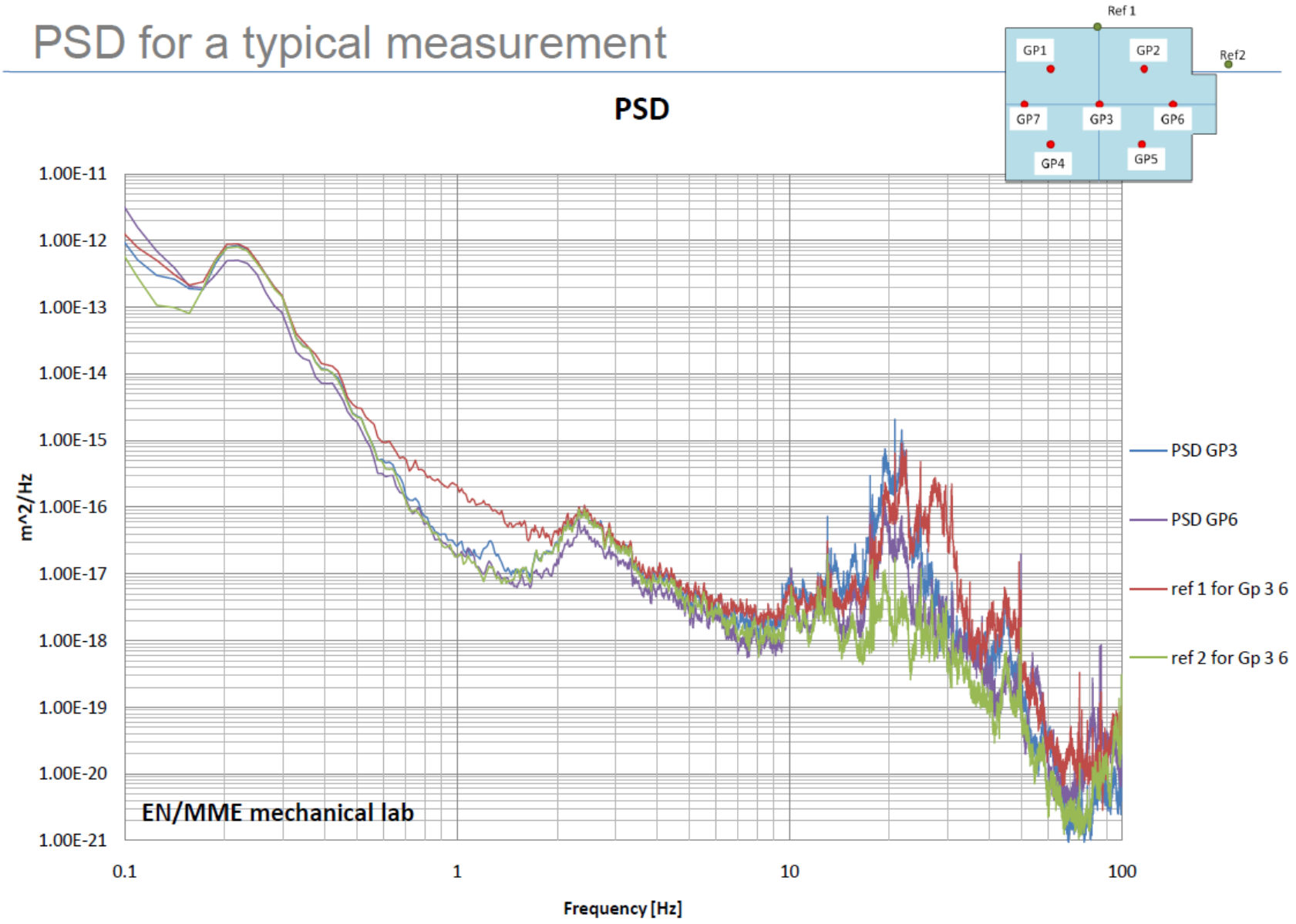
Platform Vibrations Studies

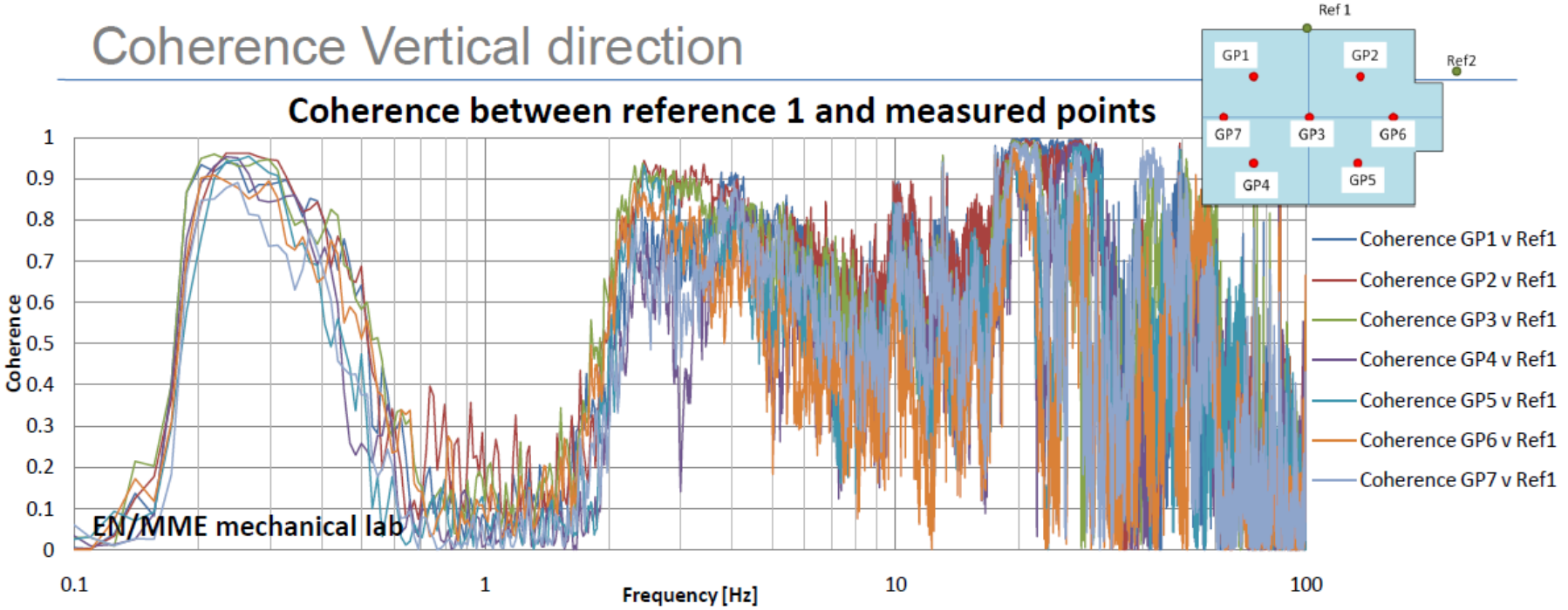
M.Oriunno, SLAC

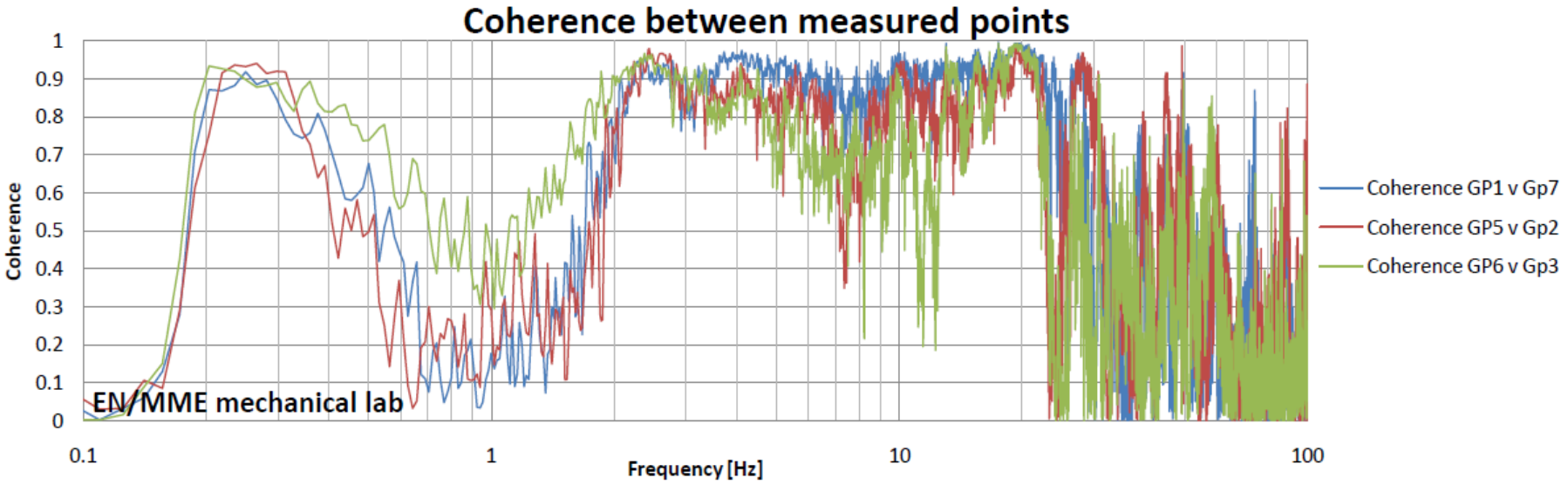
Sensor position

PSD for a typical measurement

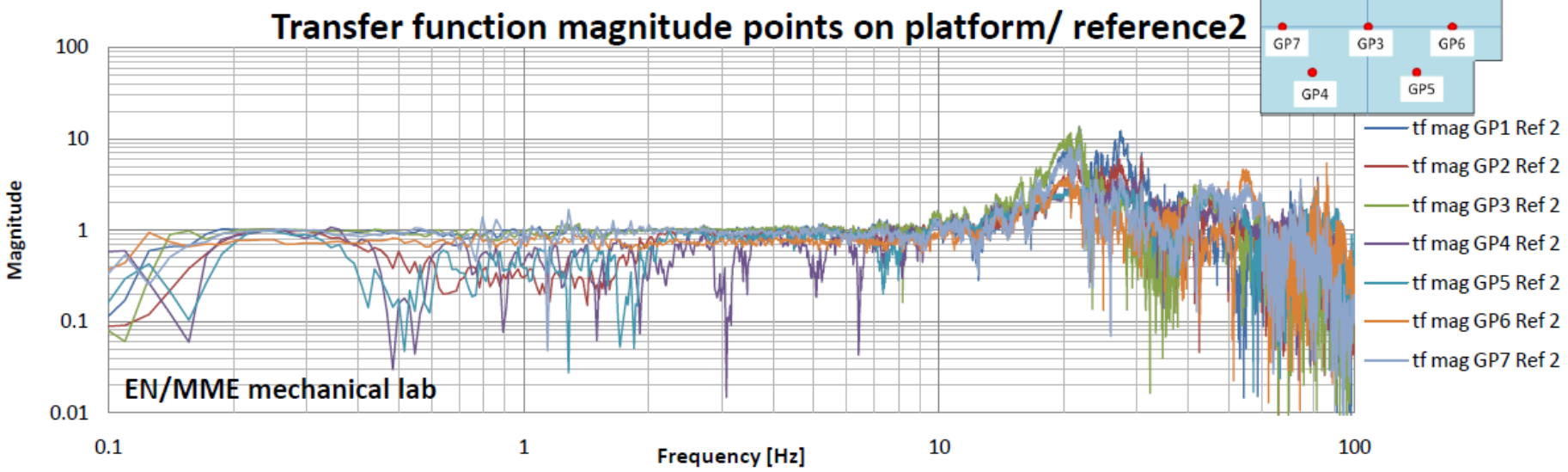


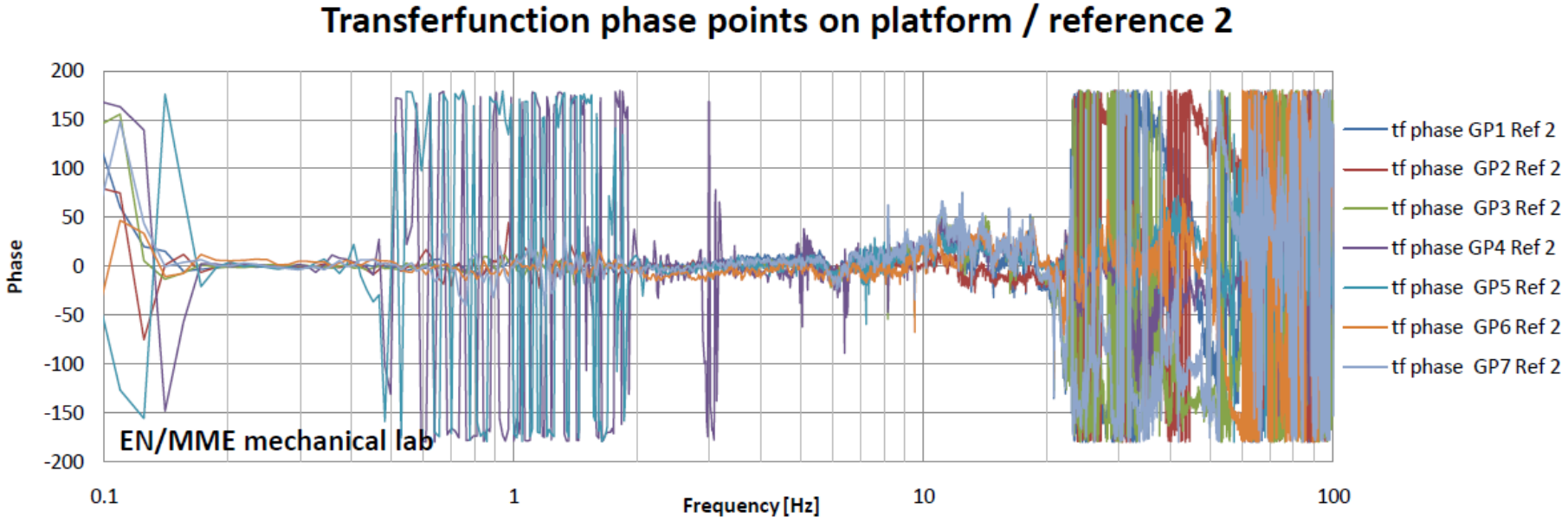
Coherence Vertical direction

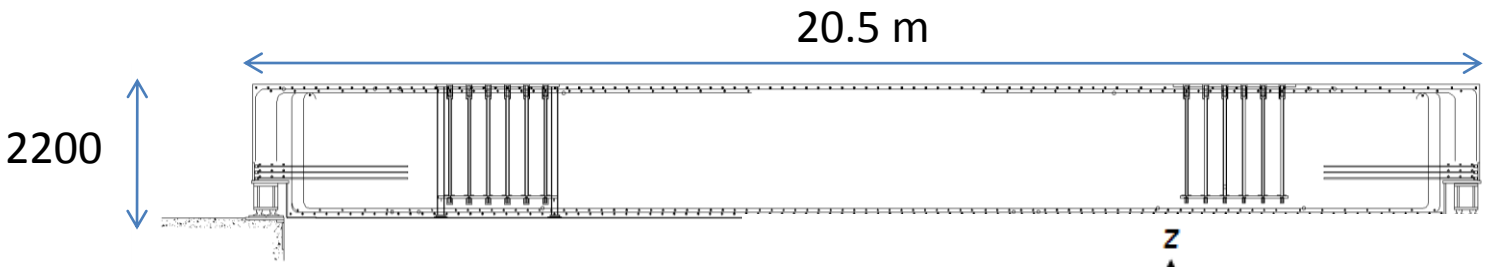




Transfer function: Vertical direction platform / ref 2







CMS Platform (as built)

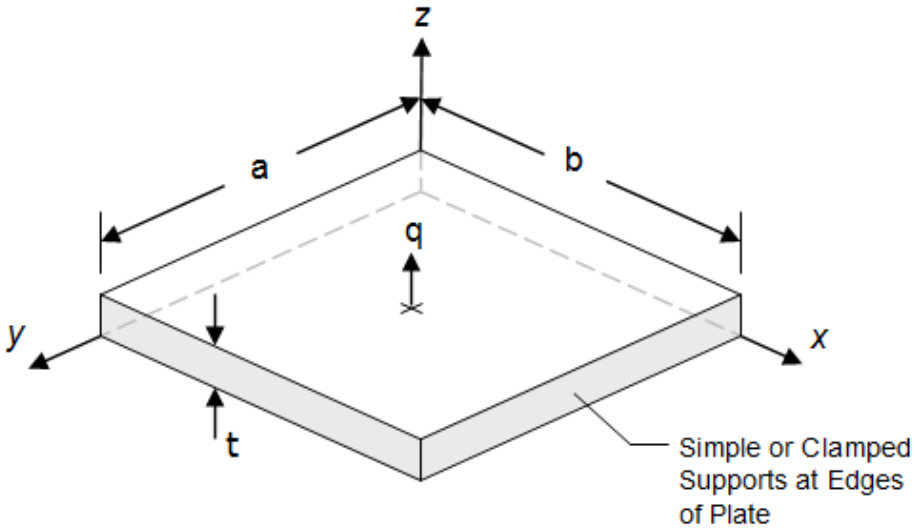
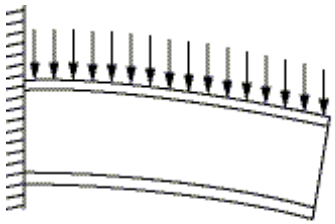


Plate Model: zero thickness with bending stiffness around the middle plane



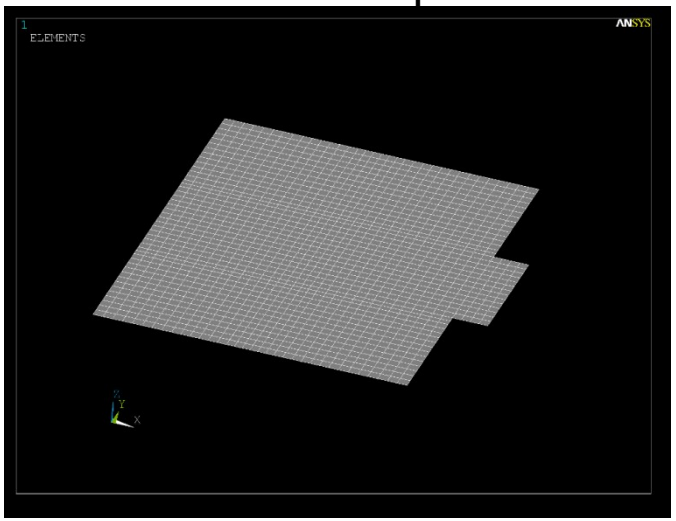
Iron re-bars (equivalent th. 25 mm)

Concrete, 2150 mm

Deformed shape without sandwich option

Iron re-bars (equivalent th. 25 mm)

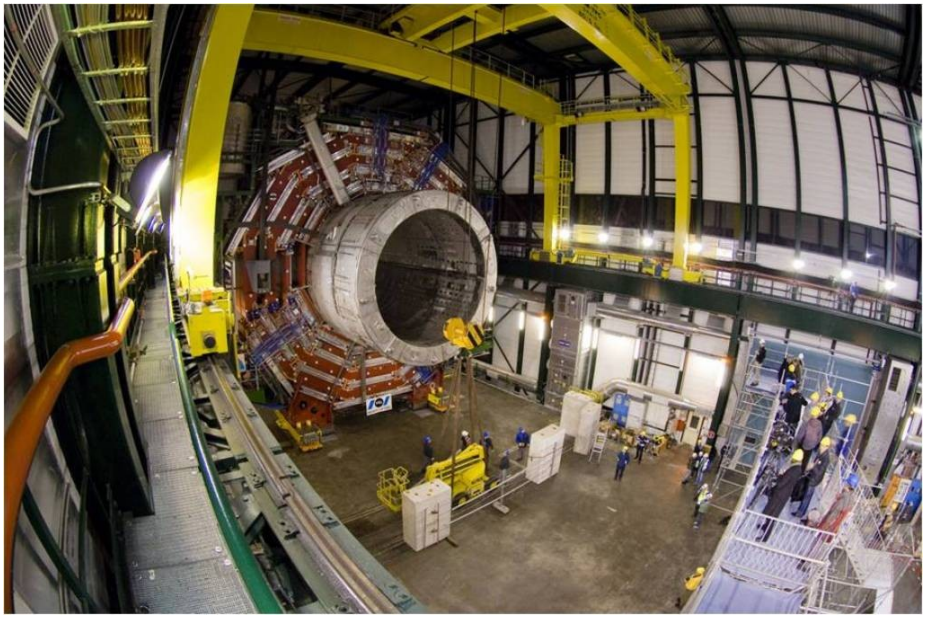
Total thick. 2.2 m

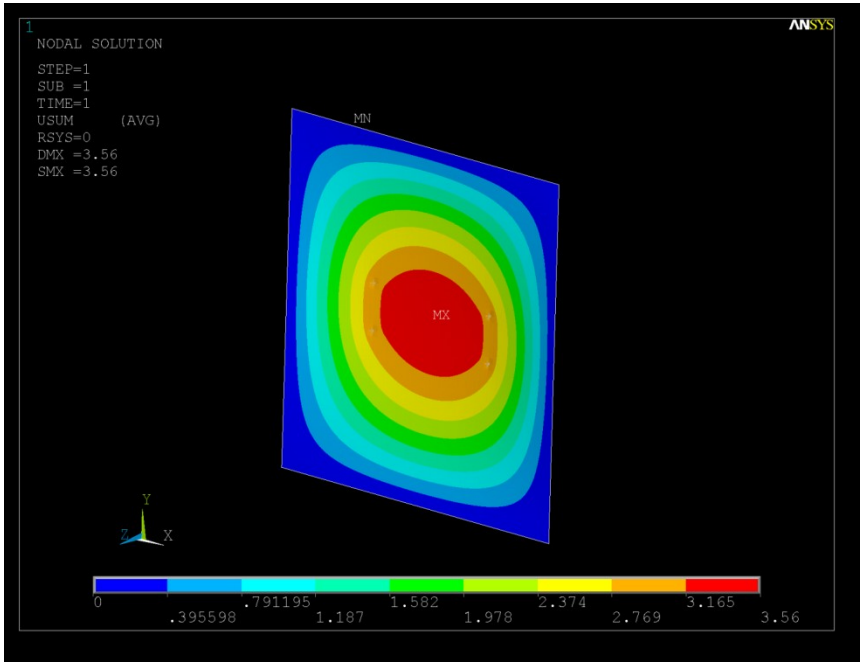


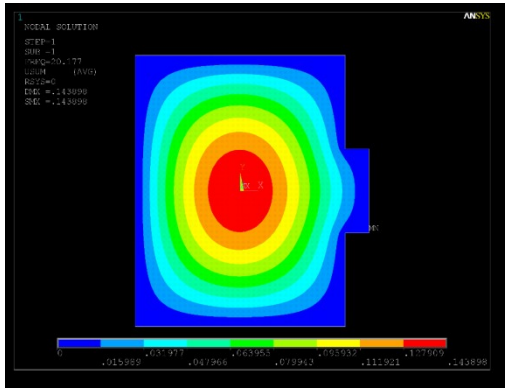
Bencmark with static test done on the platform

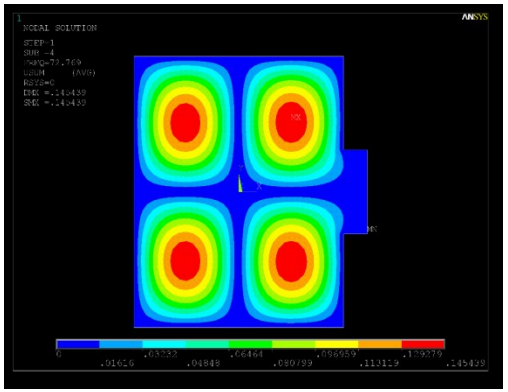
Dummy load = 2500 tons,
Weight of the platform = 1780 tons
Max sag at the center = 3.5 mm

N.B. = Platform Simply supported on the edges

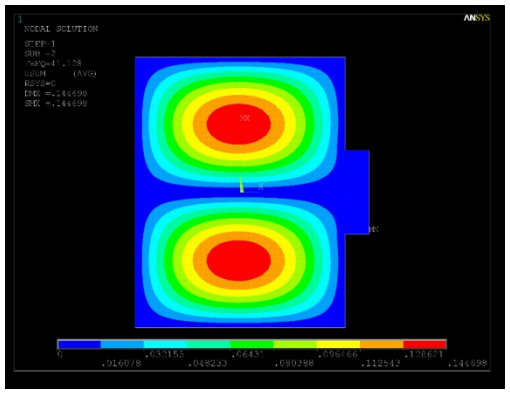


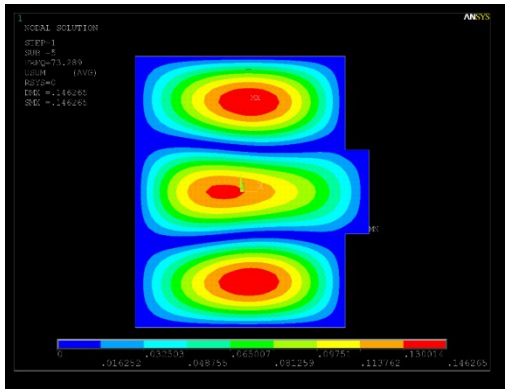


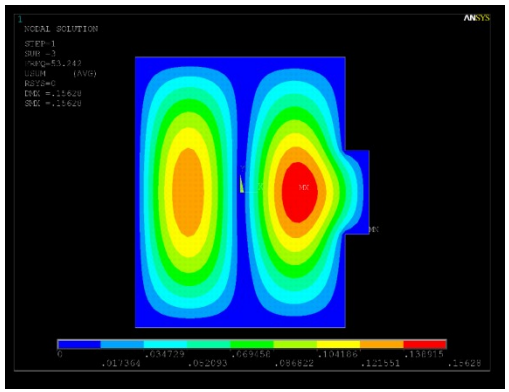


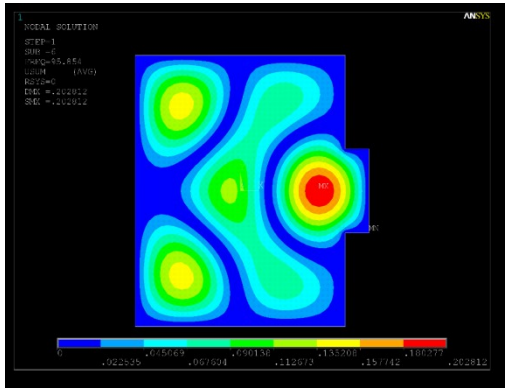


Mode	FREQ
1	20.17
2	41.12
3	53.24
4	72.76
5	73.28
6	95.85

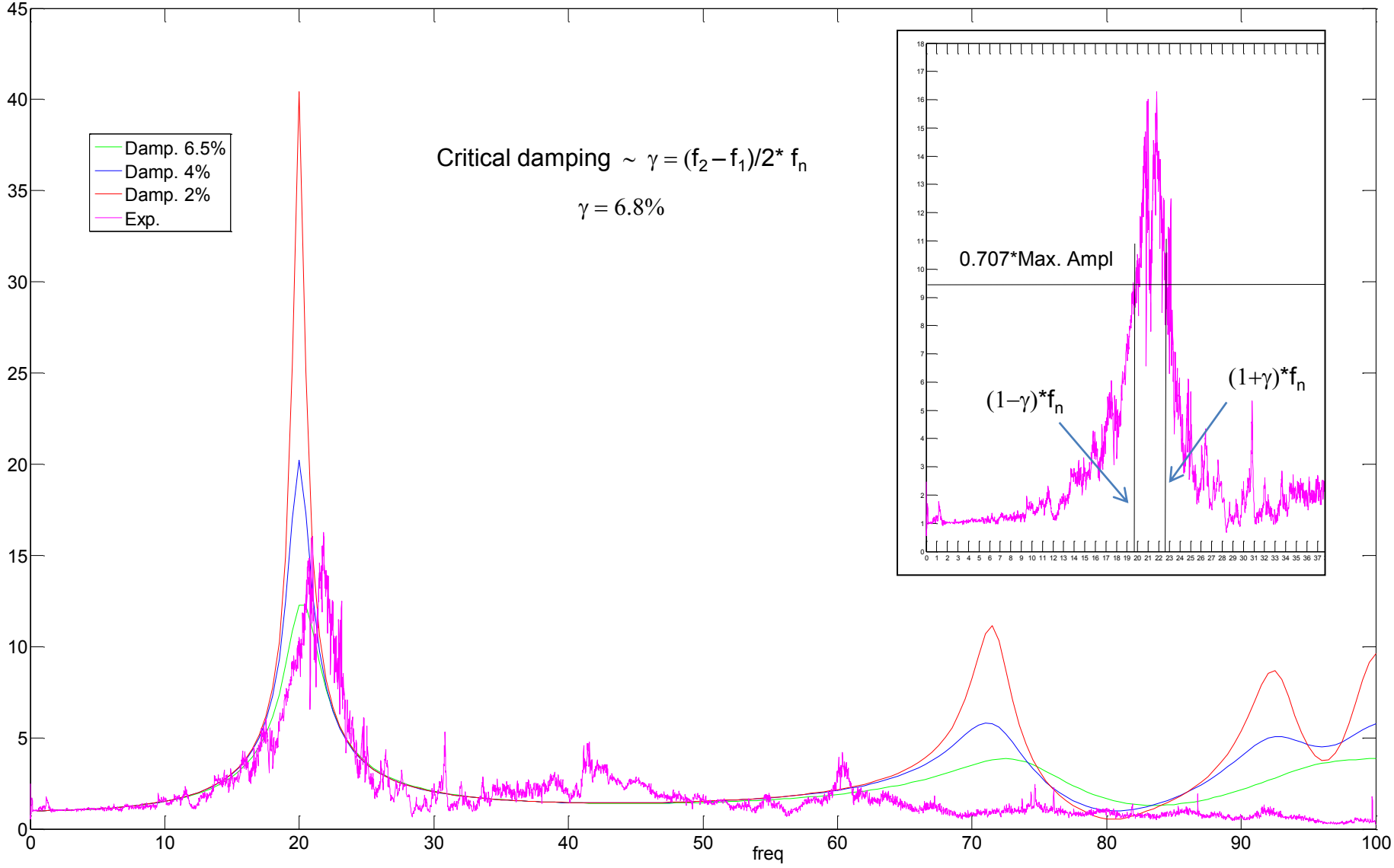




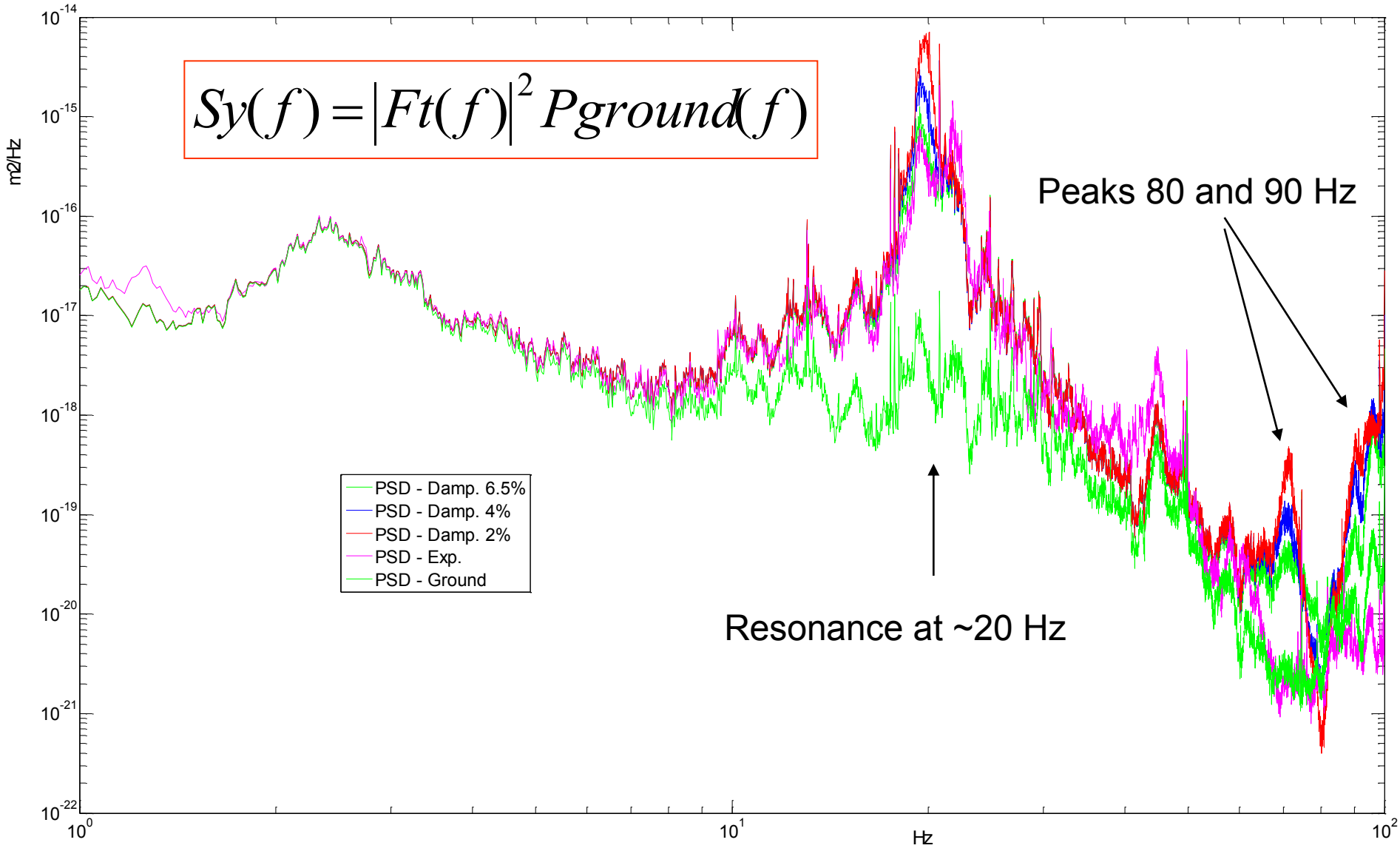




Transfer Function - Middle Point (Geophone N.3)



Simulations vs. Measured PSD (Platform Center)



Integrated Displacement (r.m.s.)