



VIBES.technology

Improving sound & vibration engineering

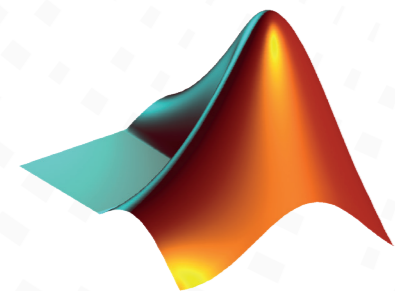
TOOLBOX FOR MATLAB

Advanced capabilities for NVH, Dynamic Substructuring, TPA & numerical modelling

UNIQUE CAPABILITIES PACKED IN A POWERFUL TOOLBOX FOR MATLAB

The VIBES Toolbox for MATLAB offers unique capabilities for Dynamic Substructuring, Transfer Path Analysis and numerical modelling. The latest scientific advancements in structural dynamics have been implemented in an easy-to-use Toolbox for MATLAB.

A collection of well-designed classes can be used to create test-based component models, reduce numerical models and combine with operational data. The built-in arithmetic operations allow to write scripts like actual equations, building to complete substructuring analyses in just a handful of commands. Conversions between various representations of systems from the dynamic substructuring framework are made easily, ranging from physical description (M,C,K matrices) to CMS reductions. The Toolbox saves you time by automating repetitive processes, with intelligent matching of DoFs and convenient generation of 2D and 3D plots. The VIBES Toolbox provides endless possibilities for the skilled engineer, accomplishing a truly hybrid approach to sound & vibration engineering.



I am amazed how the toolbox efficiently handles all data for me, allowing me to focus on my analysis.



INTUITIVE ARITHMETIC

The object-oriented workflow ensures easy data management and keeps your scripts understandable.

```
Load data
% Load FRF and operational data
V = Vibes.load('VIBES,Tire Noise_Datasets','TAB1p2 Full Vehicle FRF','Num_RFMMatrix.mat');
u = Vibes.load('VIBES,Tire Noise_Datasets','TAB1p1 Operational','Run-up.FreqBlocks.mat');

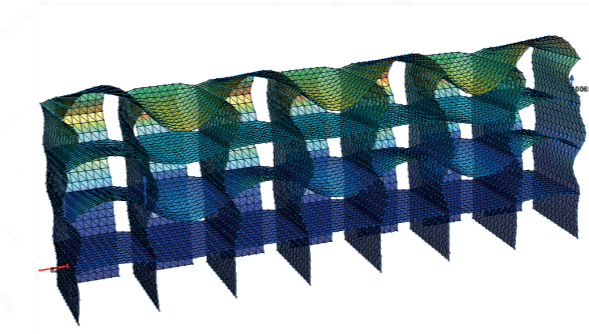
Select channels
% Select indicators, targets and blocked forces
ch_u4 = u.select('Grouping',1:10,'Description','Indicator');
ch_u3 = u.select('Name',{'Bodywork','Seat','Driver'});
ch_f2 = f.select('Grouping',1:10,'Description','B');

% Get FRFs for in-situ BF calculation & NTFs for TPA prediction
Y42 = V.subs(ch_u4,ch_f2);
Y32 = V.subs(ch_u3,ch_f2);

Blocked Force TPA
% Calculate Blocked Forces (using automatic DoF-matching)
f2b1 = Y42 \ u;

% TPA prediction to target DoFs
u3_tpa = Y32 * f2b1 > 'BF-TPA (in-situ passive-side)';

% Plot responses
u3_tpa_2b.plot('HEC Right',[],plotOpts,'Style','2k-');
```

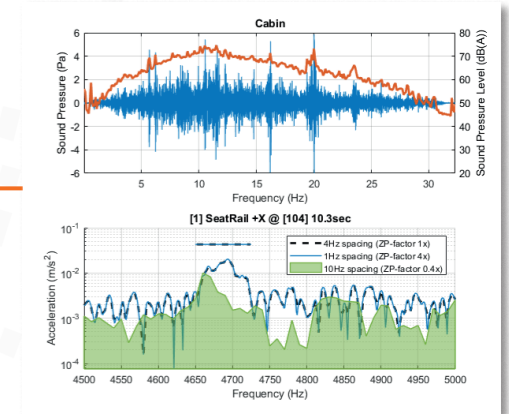


DYNAMIC SUBSTRUCTURING

Numerical and experimental model reduction techniques enable to perform true Component Mode Synthesis.

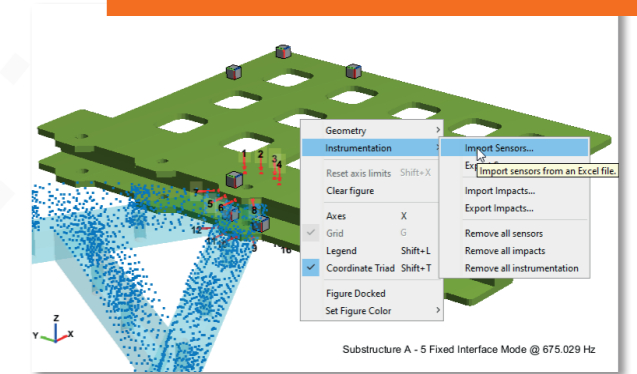
ADVANCED 2D PLOTTING

Reduce time using built-in plot functions for time and spectral data, nth-octaves, dB(A), sum levels and more.



POWERFUL 3D ENVIRONMENT

Build your substructuring scene, animate mode shapes & export to popular video formats



DO YOU WANT TO LEVEL UP YOUR SOUND
& VIBRATION ENGINEERING? GET IN TOUCH



+31 (0) 85 744 0970
info@vibestechnology.com
www.vibestechnology.com



VIBES.technology – Delft office (H.O.)
Molengraaffsingel 14
2629JD Delft, The Netherlands



VIBES.technology – Munich office
Lichtenbergstraße 8
85748 Garching b. München, Germany