

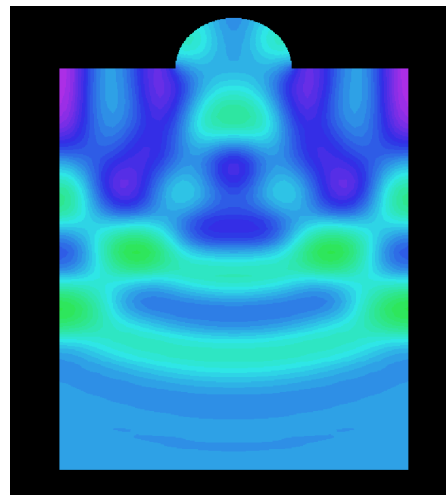
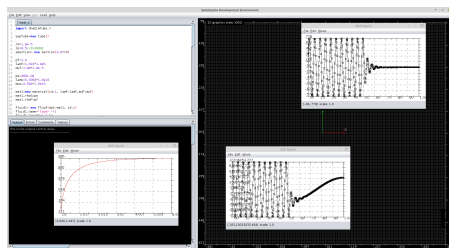
# SIMPLEGMA

Building Bridges Between Physical and Virtual World Mechanics

Innovative Solutions in Acoustics, Poroelasticity  
& Vibro-Acoustic Systems

## What We Do

SIMPLEGMA provides high-fidelity modelling and simulation services for engineering sectors involving poroelastic materials, acoustic systems, vibro-acoustic assemblies, and innovative sound-absorbing structures. We merge scientific accuracy with industrially efficient workflows to deliver credible predictions and advanced acoustic solutions.



## Core Services

### 1. High-Fidelity Acoustic Simulation

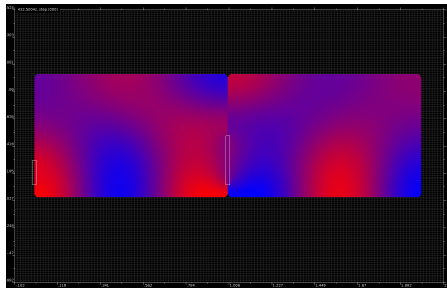
- Full Biot poroelastic modelling (1D, multilayered)
- Prediction of sound absorption, reflection, and transmission
- Advanced interface physics (Kelvin–Voigt dissipative interfaces)
- Specialised Robin-type poroelastic interface conditions
- Boundary Element Method (BEM) for diffraction, scattering, TL & RL

### 2. Design & Optimization Support

- Simulation-guided design of hybrid and sustainable materials
- Low-frequency performance optimisation
- Feasibility studies and R&D collaboration
- Performance prediction prior to prototyping

### 3. Custom Software Tools

- **jpythmen**: 1D Java-based poroelastic solver
- Sound absorption and TL prediction for multilayer structures
- Impedance, reflection and absorption coefficient calculation
- Extendable computation modules for industrial workflows



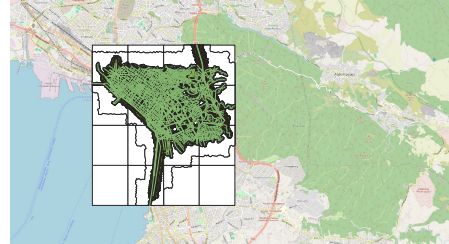
- Tuned and resonant acoustic structures
- Vibro-acoustic assemblies
- NoiseModelling: sound mapping for environmental acoustics

## Numerical Methods

- Boundary Element Method for diffraction, scattering, and absorption
- Finite Element Method for room acoustics
- Finite Difference schemes for real-time auralization
- Advanced implementation of dissipative and poroelastic interfaces

## Applications

- Noise barriers (road, railway, urban installations)
- Porous, composite, and concrete absorbers
- Building and room acoustics



## Why SIMPLEGMA?

- Deep expertise in poroelastic and acoustic modelling
- Accurate predictions from low to very high frequencies
- Research-validated models and implementations
- Industry-ready tools and flexible collaborations

## Contact

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