COMSOL Multiphysics News

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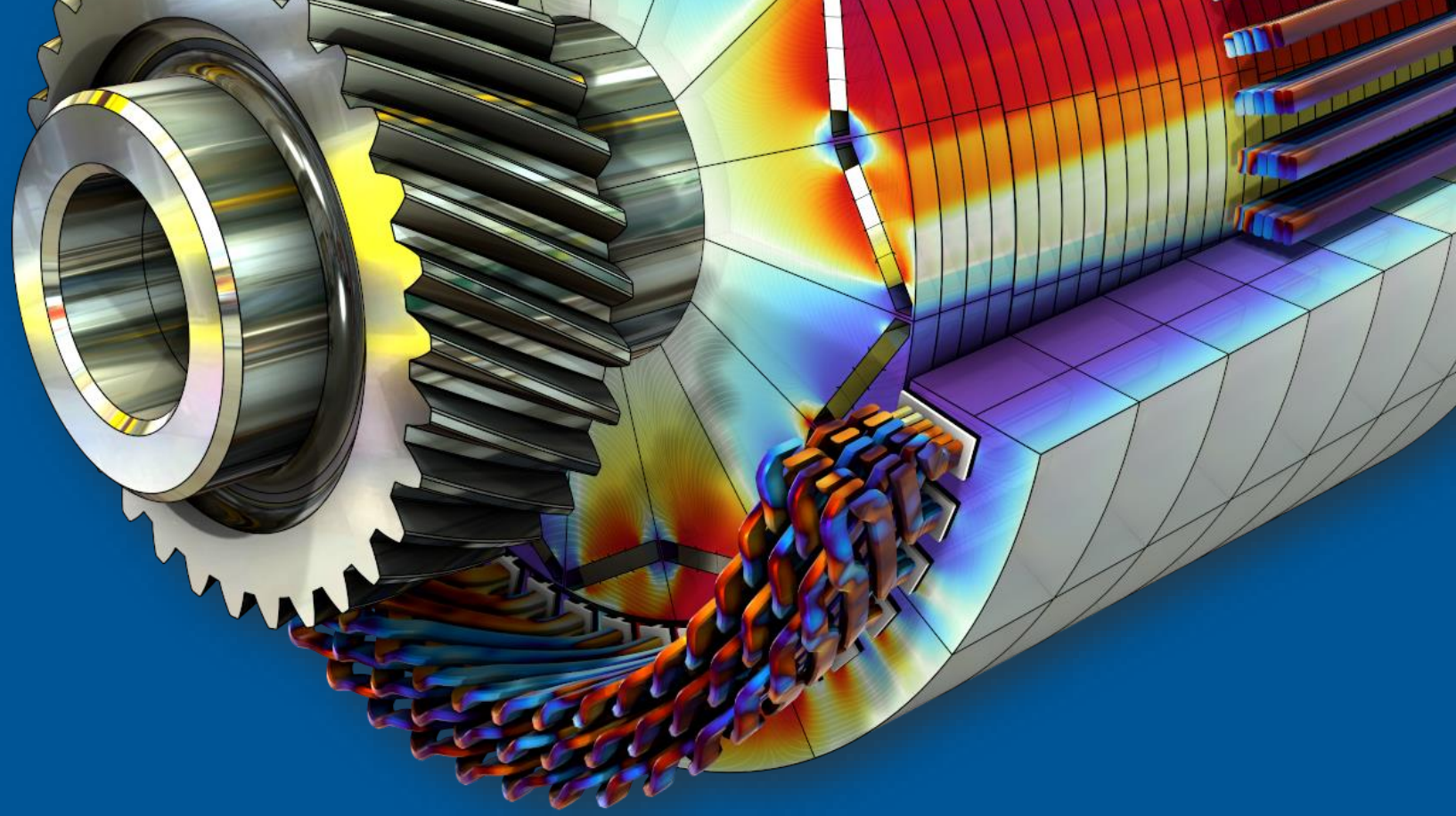


COMSOL Multiphysics 6.3

Journey for Democratization of Multiphysics Simulation

1998

Model Builder COMSOL Multiphysics

2014

Application Builder COMSOL Multiphysics
COMSOL Server

2018

COMSOL Compiler

2023

Surrogate Model
Deep Neural Networks

2024

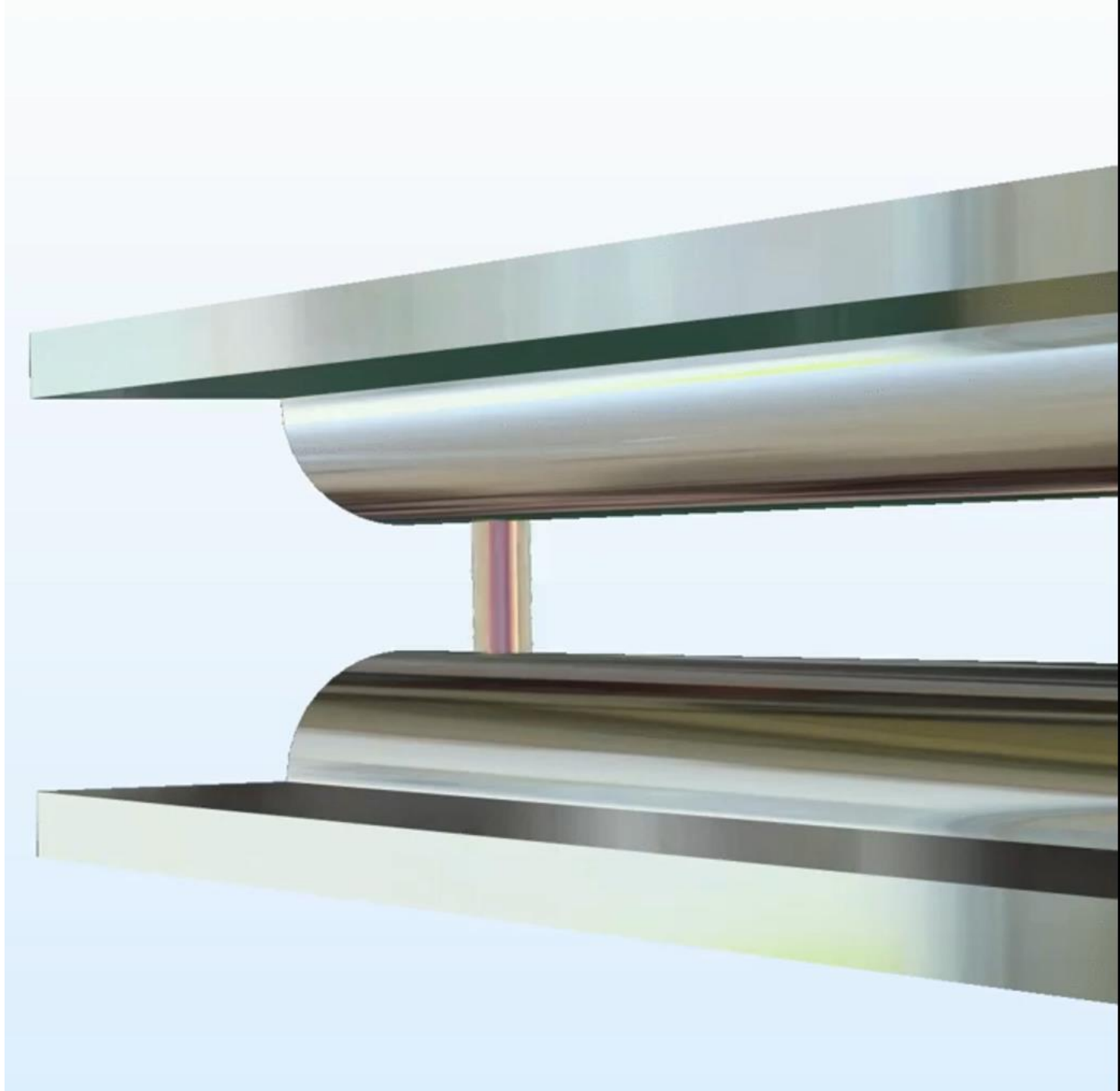
GPU Computations
GPU Training

Top 5 COMSOL Multiphysics News

1. New Electric Discharge Module
2. Automatic Geometry Cleanup
3. Interactive Java and Chatbot Interfaces
4. GPU acceleration for faster transient acoustics simulation and surrogate model training
5. New Efficient Global Optimization Method

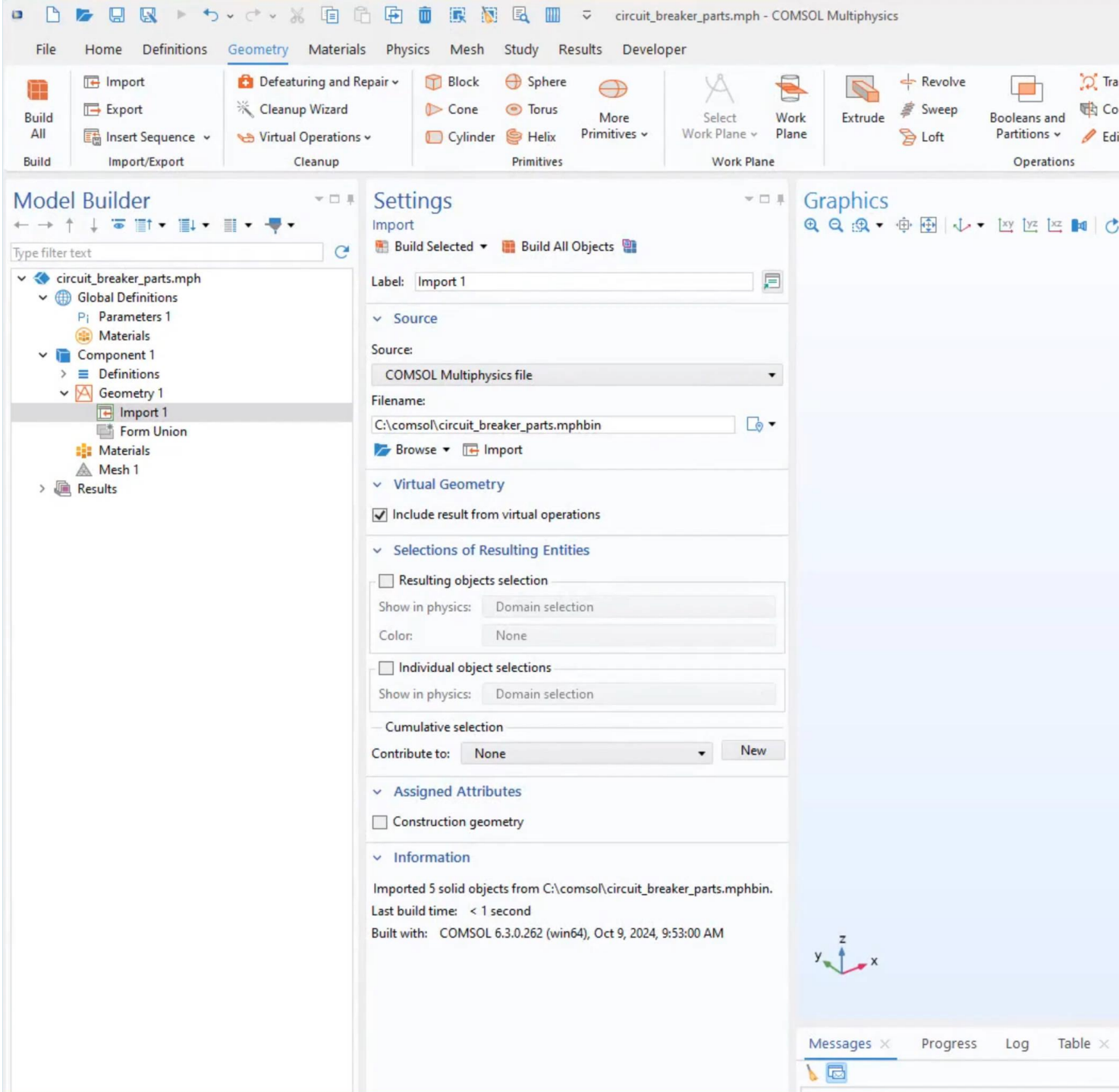
New Eletric Discharge Module

- **Webinar Modeling Electric Discharge in COMSOL Multiphysics – 25.9. 2025**
- For simulating discharges in gases, liquids and solid dielectrics.
- Discharges and electric breakdown prediction
  - Streamer Discharges
  - Trichel Pulses
  - Electrostatic Discharges
  - Arch Discharges
  - Positive Glow Corona
  - Dielectric Barrier Discharges
  - Solid Dielectrics
  - Lightning-Induced Voltage



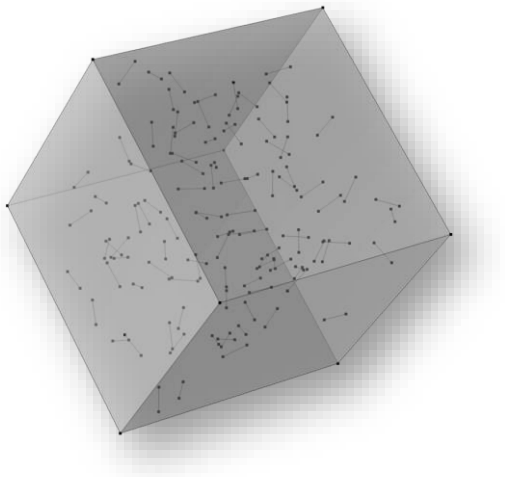
Automatic Geometry Cleanup

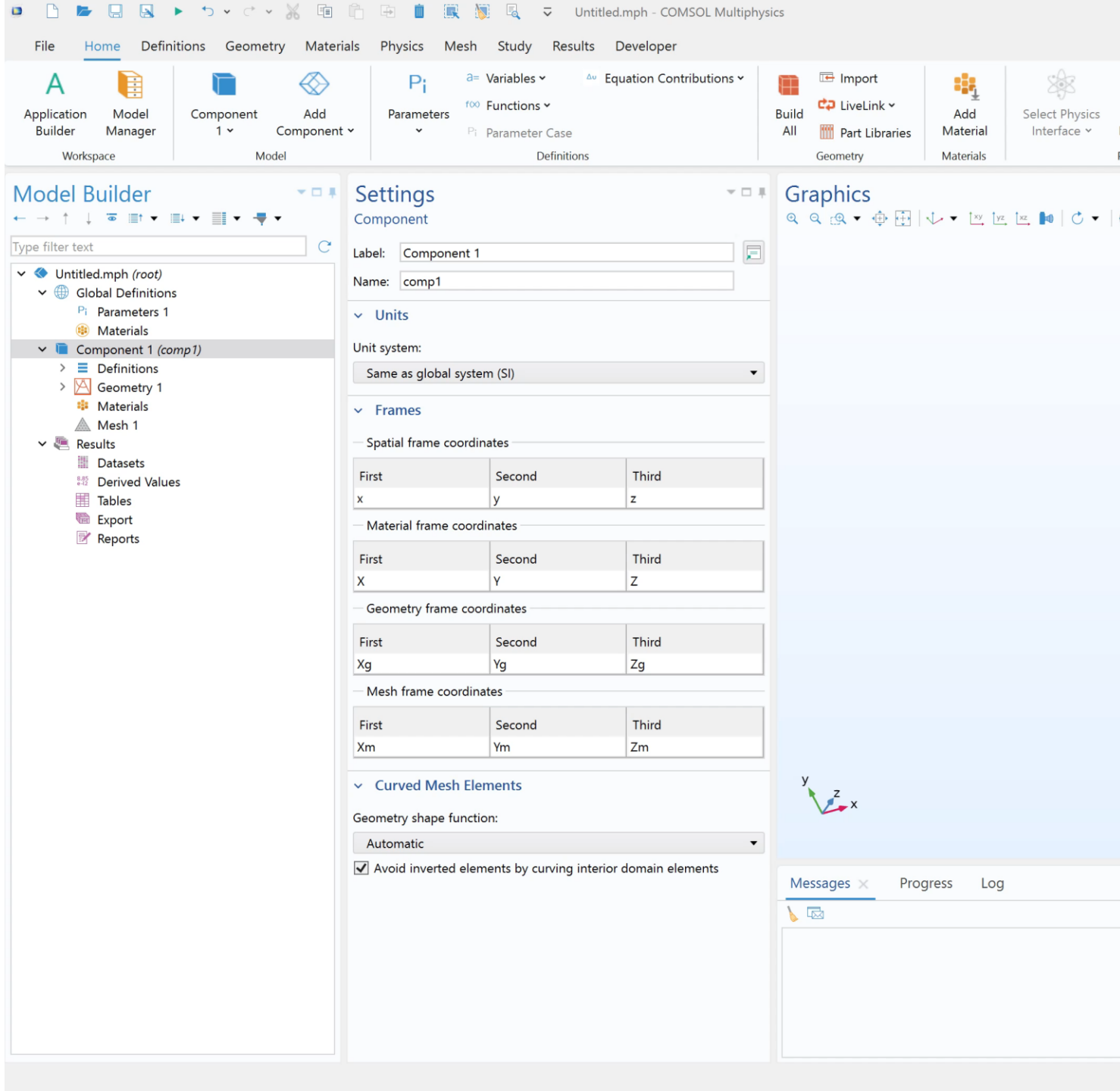
- Automatically and transparently detects and removes small details and gaps in your geometry.
- User has full control of the process!
- Requires CAD Import Module (or products containing it).



Interactive Java and Chatbot Interfaces

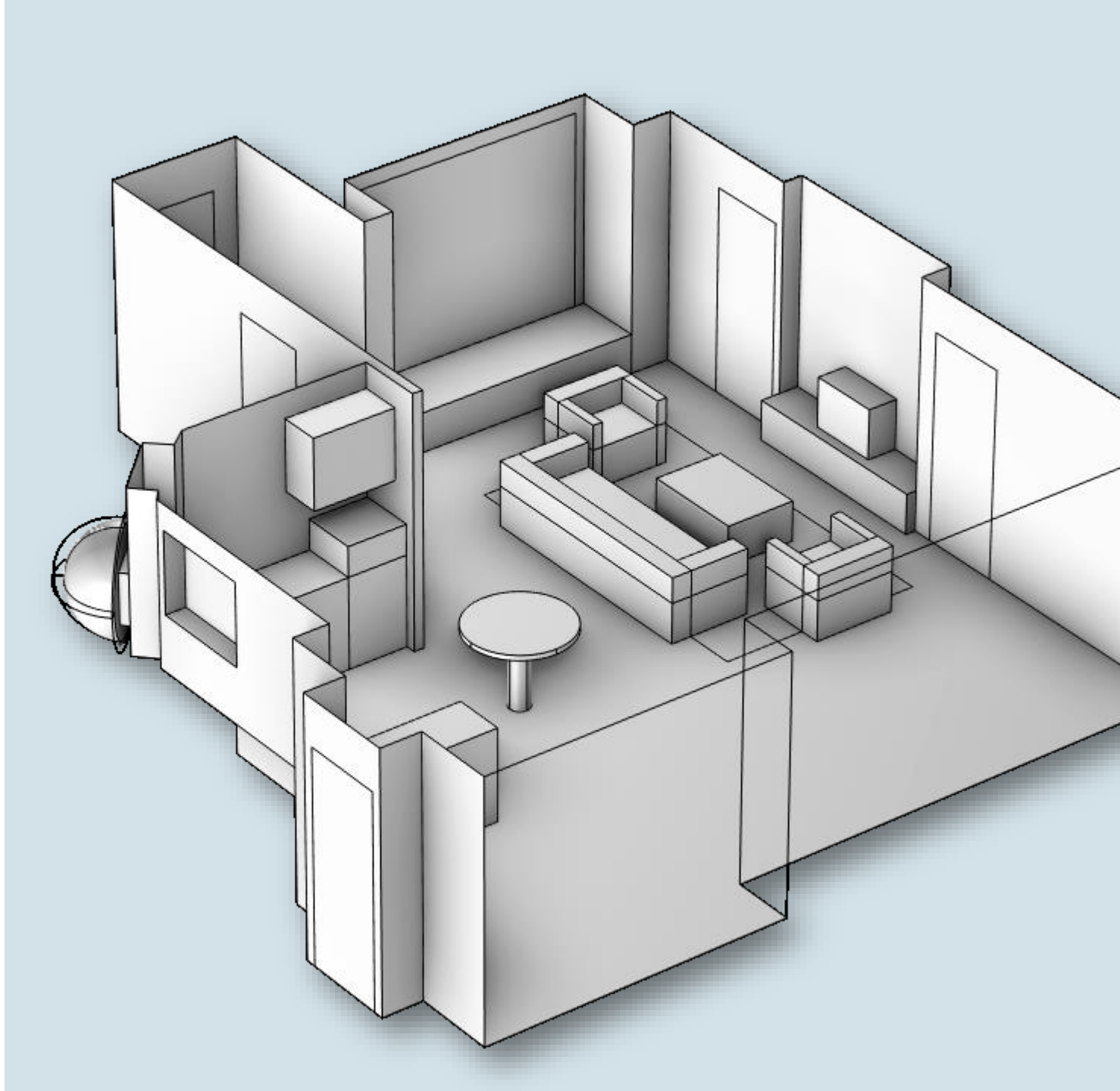
„Create 100 randomly positioned line segments with length 0.01 m. All line segments has to be enclosed in a cube with center in point 0,0,0 and side length 0.1 m. Check carefully that all line segments points are inside the cube.“





GPU Accelerated Computing

- Graphics cards with computation capability develope fast.
- GPU Acceleration in COMSOL 6.3:
  - Deep Neural Network training
  - Pressure Acoustics, Time Explicit simulations
- Compatibility and Requirements
  - A NVIDIA® graphics card, with *Compute Capability* 6.0–9.0
  - Windows® or Linux®
  - CUDA® Toolkit 12.4



GPU Accelerated Computing

- https://youtu.be/bfyDNQipnew?si=38FchpSxM0Dfv9S1
- Our webinar on Neural Networks Training and Acoustics Simulations on GPU in COMSOL Multiphysics
- Can COMSOL beat sitcom logic?
  - How come Ross and Monica can discuss secrets speaking loudly without their parents overhearing?

New Efficient Global Optimization Method

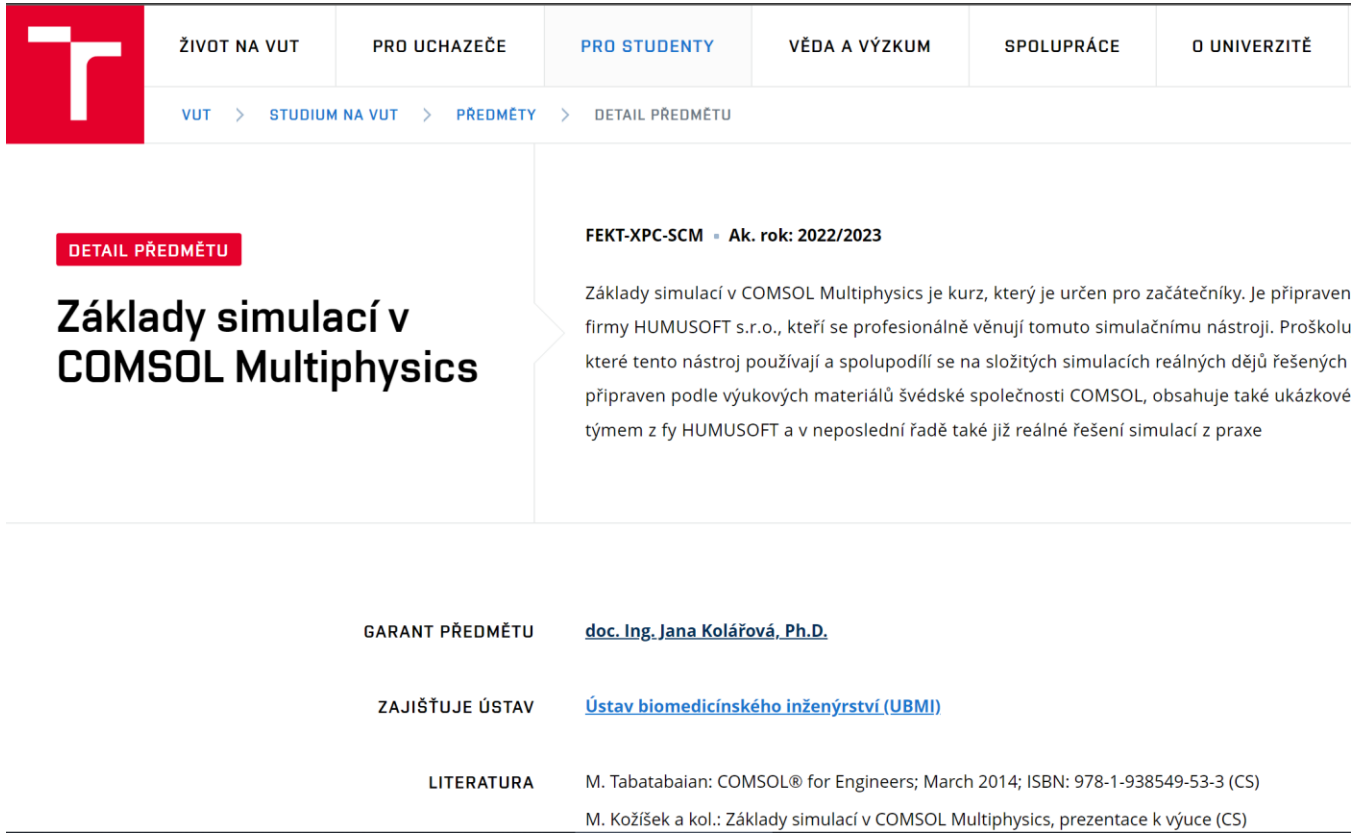
- EGO (Efficient Global Optimization) is new gradient-free optimization study step.
- EGO uses Bayesian optimization to construct a surrogate model.
- The result can be further improved by switching to another (local) gradient-free solver.
- Parameter Optimization,

Other News

Humusoft Territory Expansion

Join the COMSOL Multiphysics Course

- Semester course
- Content inspired by modern simulation courses at TU Munich and TU Eidhoven
- 3 Credits
- Still free seats



https://www.vut.cz/studenti/predmety/detail/263670