

Magnetic Levitation System for Take-off and Landing Airplane – Project GABRIEL

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Introduction: The safe, economic and ecology operation of airplanes conduct to search new construction. The modern airplane will has launcher for take-off and landing. It will replace chassis and it will assist or replace engines during take-off.

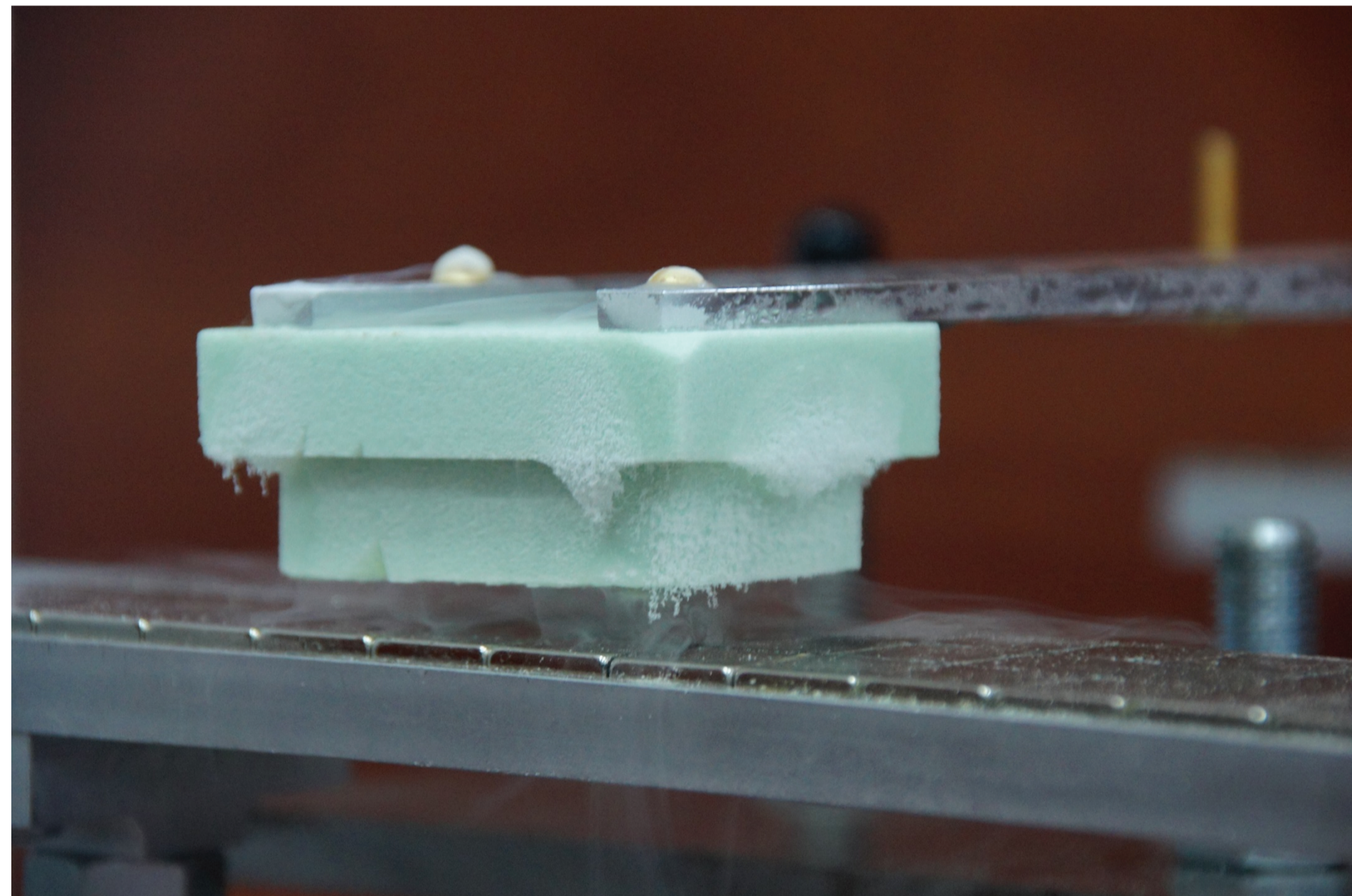


Figure 1. Magnetic suspension of sledge.

The airplane is suspended under runway by the magnetic levitation system. The magnetic forces are result of collaboration materials with different magnetic property. The passive magnetic suspension can be divided in to: passive magnetic suspension with magnets, superconductors and electrodynamic passive magnetic suspension [3]. There will be presented construction and numerical verification of the superconductor passive magnetic suspension.

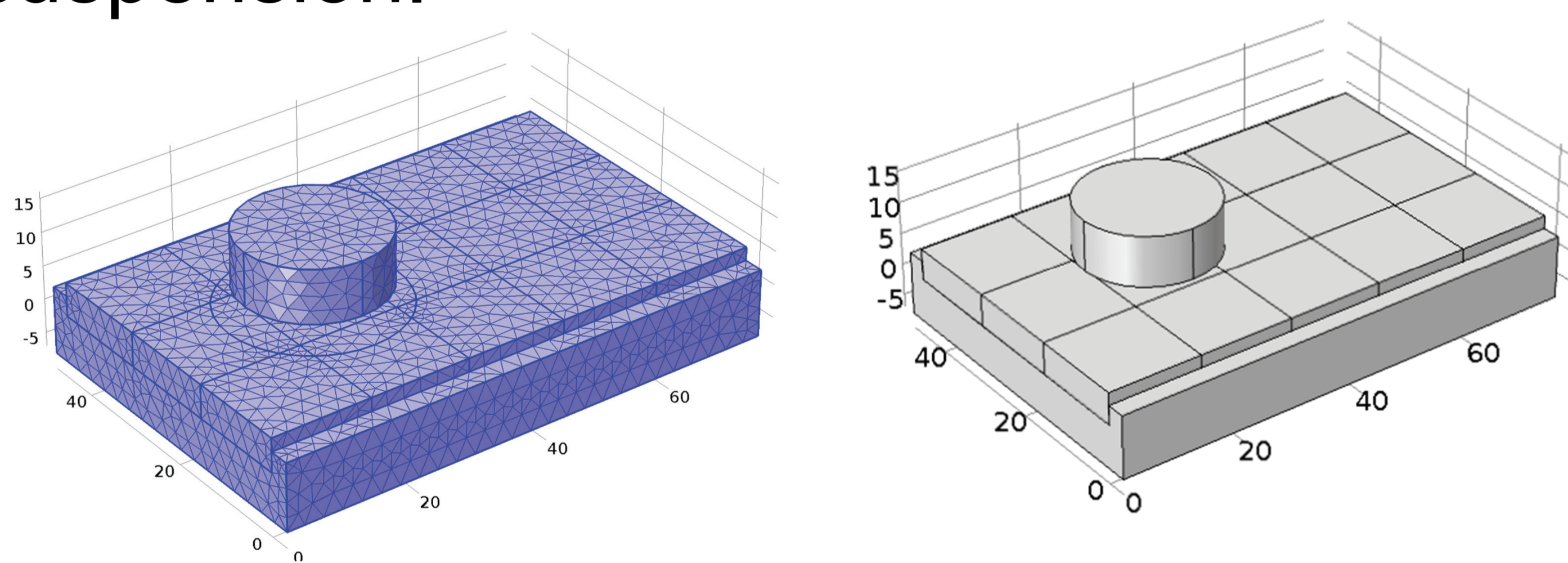


Figure 2. Model of suspension.

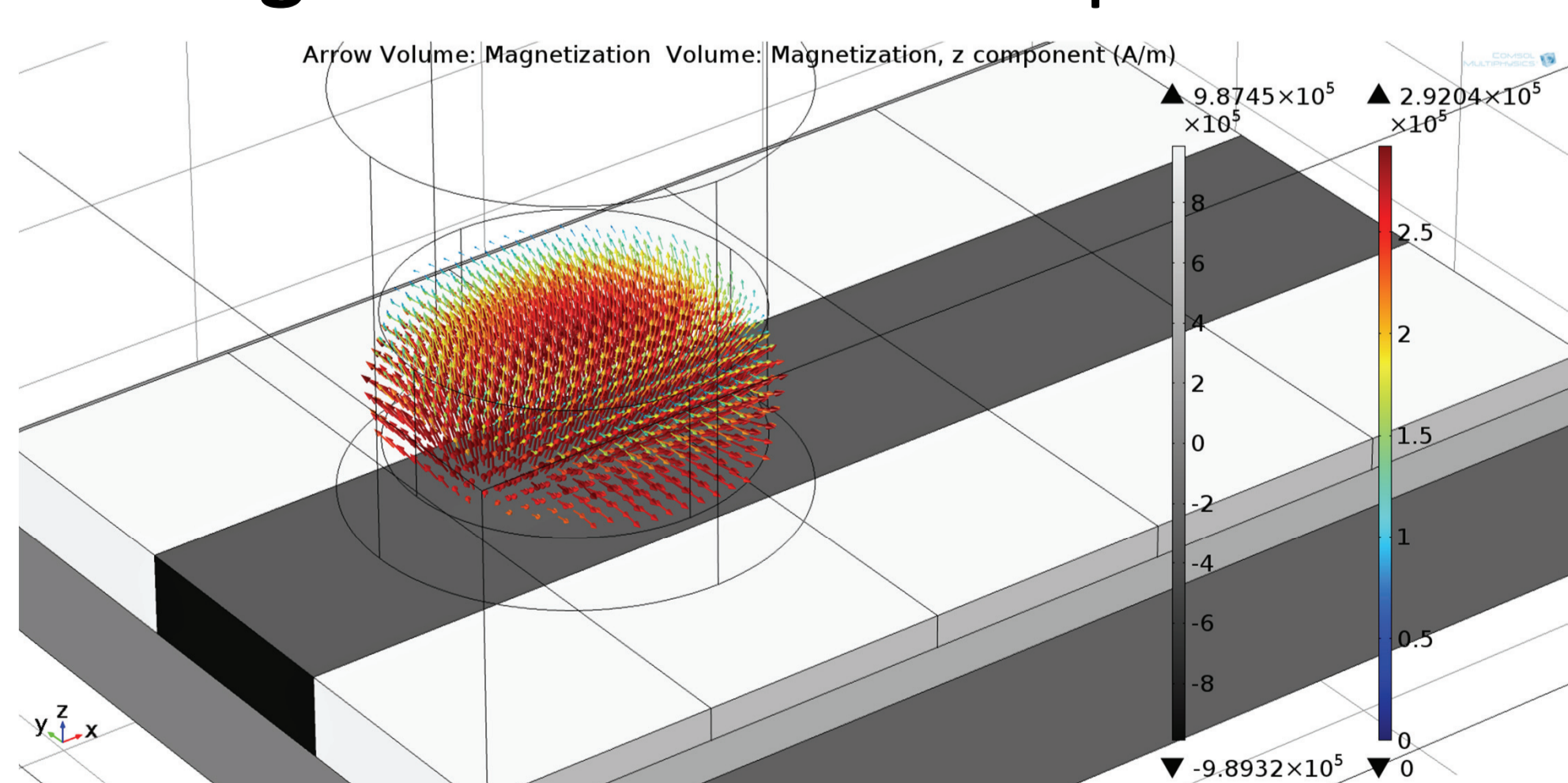


Figure 3. Magnetization of superconductor.

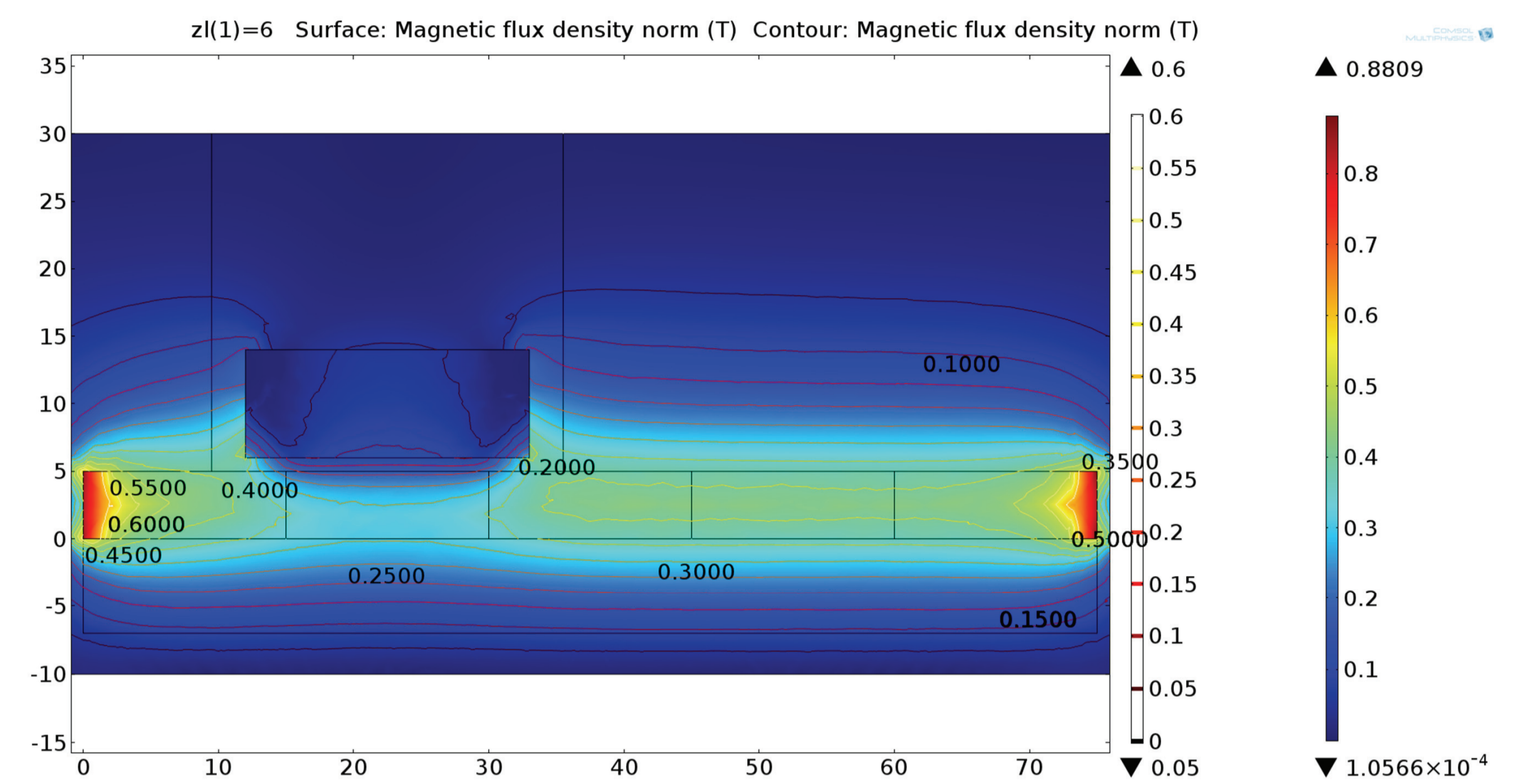


Figure 4. Meissner effect.

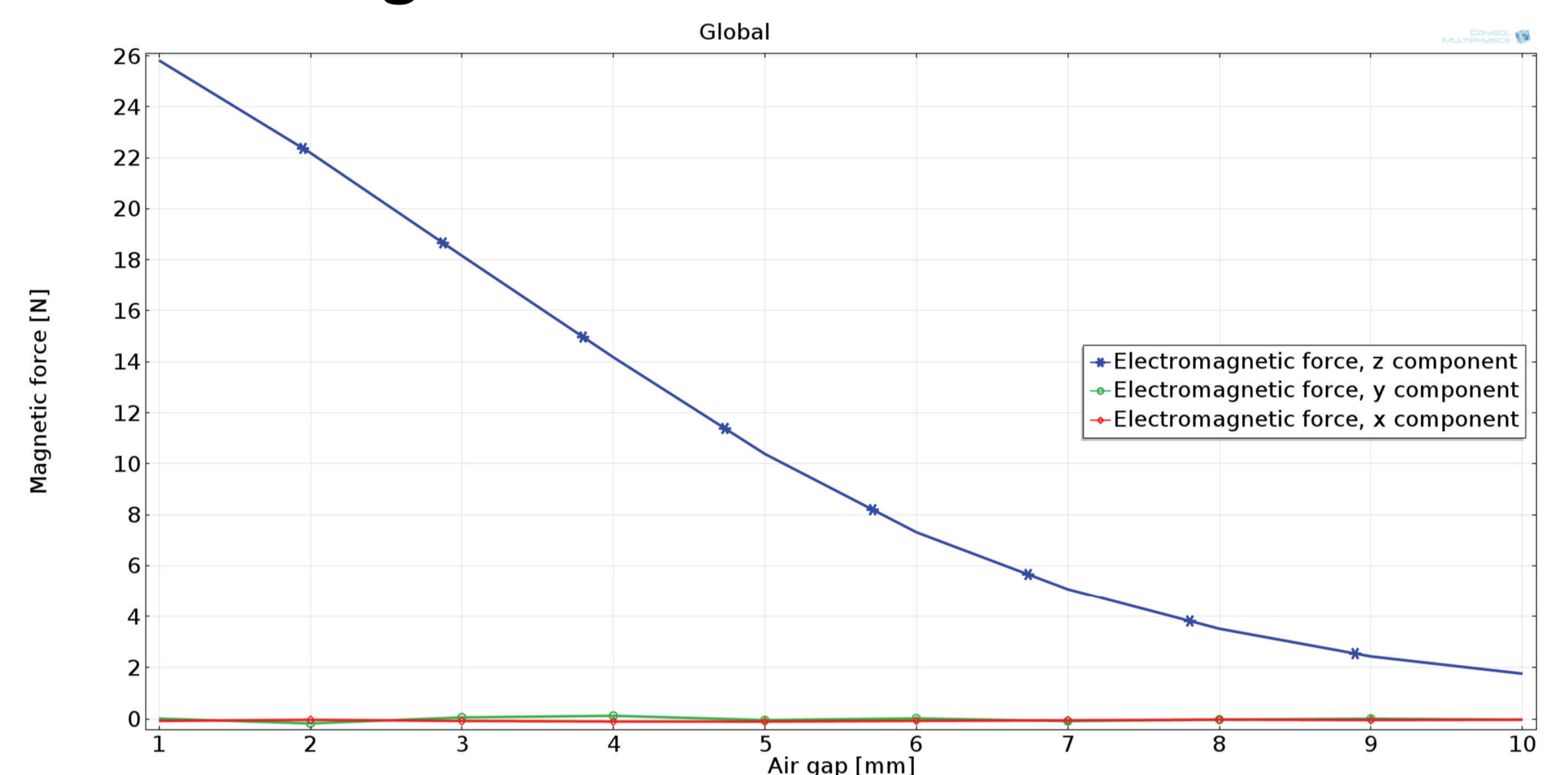


Figure 5. Component of magnetic forces.

Conclusions: This magnetic suspension generated stable magnetic force during horizontal move of superconductor. The box has got 3 mm underside. The admissible air gap is equal 4 mm. The suspension system generated 14 N for air gap 4 mm per one bulk of superconductor.

References:

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