

## **Talk announcement**

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14:00, S2 416-1

## **Electric Machine Simulation**

The simulation of electromagnetic fields is crucial for analyzing and improving the performance of electric motors. In this talk, we present the development of a finite element simulation for a two-dimensional cross-section of a permanent magnet synchronous motor (PMSM). Starting from Maxwell's equations, we derive a variational formulation for the magnetic vector potential and discretize it using the finite element method. To efficiently handle the rotation of the motor without costly remeshing, a Nitsche-type mortaring technique is applied for coupling between rotor and stator.

Finally, we demonstrate an implementation of this approach, developed in collaboration with Linz Center of Mechatronics (LCM) GmbH, in the FEM software Netgen/NGSolve, including visualizations of the magnetic flux density and torque.