

Talk announcement

Markus Schwarz
(NuMa)

Tuesday, April 23, 2024
16:15, S2 044

Modeling and Simulation of Anisotropic Magnetic Materials

The correct modelling and characterization of soft magnetic materials is crucial for the simulation and optimization of electrical machines and transformers. In the non-hysteretic isotropic setting, a material law of the form $B=(H)H$ is commonly used. As this material law is not suitable for modelling anisotropy, an alternative energy-based material law is presented. As these material models are fitted to real measured data, first, a brief introduction into the measurement methods such as the Epstein frame and the rotational single sheet tester are presented. The physically and mathematically motivated requirements for the energy-based model are discussed. Furthermore, the numerical approaches for approximating the measured data with the material models and the realization of these models based on splines are presented. Particular attention is paid to the convexity of the material models. Finally, some results of these material models are shown.