

**Practical Magnetic Design . . .
Where is Leakage Flux?
Why are Materials Magnetic?**

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Tuesday, November 28th 2023
2:00 pm – 3:00 pm Olin 202

Open to the Public
Reception to follow room 204



An IEEE Milwaukee Magnetics Chapter Event

ABSTRACT: Visualizing magnetic flux paths in air is critical to calculating the performance of magnetic devices that have leakage flux and air gaps such as actuators and transformers. Methods for visualizing magnetic flux paths in air are described, which leads to calculations for permeance, inductance, and forces. Magnetic material properties and typical alloys are reviewed. Basic correlations are combined to evaluate the performance of transformers (flux density, core loss, leakage, power).

BIOGRAPHY: Mark is an electro-mechanical engineer with expertise in transformers, inductors, magnetic materials, finite element magnetics, sensors, actuators, circuit breakers, contactors, mechanisms, hydraulic valve actuators, bimetal actuators, and electronic packaging (heat transfer, fluid dynamics, vibration, shock). He retired after 37 years at Eaton Research Labs with 86 US patents, 18 journal publications, 1 published book, and contributions to 2 other books (1 chapter, and 1 appendix). He is currently working with CorePower Magnetics in Pittsburgh and is a Visiting Research Associate at the University of Pittsburgh in the department of Mechanical Engineering and Materials Science with Prof. Paul Ohodnicki Jr. and Prof. Brandon Grainger.