

# Extended day of the XIII International Conference on New Frontiers in Physics 2024

Contribution ID: 89

Type: **Talk**

## Ferrite Superconductivity

Thursday 12 December 2024 16:10 (20 minutes)

This proposal describes the arrangement based on the Einstein de-Haas experiment. An externally applied magnetic field magnetized the ferrite core by giving microwave power frequency to the coil around the ferrite core. Ferromagnetic resonance is achieved due to the effect of the interaction of spin precession magnetic moments due to Zeeman splitting on the macroscopic magnetization of the material. The core attains negative permeability at ferromagnetic resonance. Due to negative permeability, the ferrite counteracts the magnetisation due to the applied DC electric field given to one end of the ferrite core. In certain scenarios, negative permeability can lead to the expulsion of the magnetic field resulting in  $B$  equal to zero inside the material. This induced phenomenon is somewhat analogous to the Meissner effect observed in superconductors. In the case of negative permeability, the negative magnetic response effectively shields the material's interior from external magnetic fields. The curl of the magnetic field is zero resulting in a net force equal to zero on the moving charge carriers.

### Details

Deepalakshmi Chandrasekaran  
Asst Electrical Engineer  
TANTRANSCO, India

### Is the speaker for that presentation defined?

Yes

### Name of experiment and experimental site

CERN, Geneva. ISOLDE and neutron Time-of-Flight Experiments Committee: CERN-INTC-2024-042 ; INTC-P-707.

### Is this an abstract from experimental collaboration?

Yes

### Internet talk

Maybe

**Author:** CHANDRASEKARAN, Deepalakshmi

**Presenter:** CHANDRASEKARAN, Deepalakshmi

**Session Classification:** Extended session