



**MT 26**  
**International Conference**  
**on Magnet Technology**  
Vancouver, Canada | 2019

Contribution ID: 1288

Type: **Poster Presentation**

## **Mon-Af-Po1.12-06 [13]: An Improved AC loss Calculation Method Based on H-formulation for HTS Magnets with Iron Core**

*Monday 23 September 2019 14:30 (2 hours)*

The HTS windings in magnets can provide large current excitation in a limited space. However, under high level excitation condition, especially in the case of fast adjusting process, AC loss will occur and lead to reduction of thermal stability. The H-formulation method is widely used and basically meets the requirements of AC loss calculation for thousand-turns coil group. However, for magnets with iron core, the nonlinear saturation characteristic in ferromagnetic domains makes it difficult to calculate AC loss accurately and efficiently with traditional methods. Based on H-formulation method, we provide an improved modeling process of AC loss calculation in COMSOL Multiphysics. A sample magnet is simulated with the method and the AC loss calculation results are compared with experimental measurement results. The results show that AC loss of HTS magnets with iron core can be calculated accurately and efficiently with the improved method.

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**Session Classification:** Mon-Af-Po1.12 - Losses in Conductors and Coils I