

The Beams and Applications Seminar Series

State-of-the-Art Superconductors and Very High Field Magnets

Arno Godeke

Lawrence Berkeley National Laboratory

**Bldg. 401, Room B-2100
Monday August 22, 11:00 am**

Host: Efim Gluskin

Abstract:

The 2005 COHMAG report emphasized that increasingly higher magnetic fields hold a significant advantage for advances in science and technology. High magnetic fields are commonly generated using superconducting magnets, and the achievable fields are limited by the performance boundaries of the superconducting materials from which they are constructed. After a concise introduction of the relevant superconducting parameters, I will sketch the performance landscape of the present state-of-the-art technological superconducting materials. I will outline some of the performance limiting factors in these superconducting materials, and how they can be mitigated. I will demonstrate how intrinsic material limitations affect the performance of magnets, using record accelerator dipole magnets as an example. During the seminar, it will become evident that a further progress in the magnetic field magnitude is not possible due to intrinsic limitations in Nb-based, classic low temperature superconductors, and that we are presently at the dawn of a mandatory large-scale implementation of modern high temperature superconductors (albeit operating at low temperature), to further increase the performance of very high field superconducting magnets.

For more information visit

http://aps.anl.gov/News/Meetings/Beams_and_Applications_Seminars/

Visitors from off-site please contact Carmen Nolasco
(mnolasco@aps.anl.gov, 630-252-6159) to arrange for a gate pass.