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Expectation from magnet designer to magnet testing

Tuesday 3 June 2025 17:40 (1 hour)

About the lecture:

Superconducting magnets are at the heart of advanced scientific and industrial applications —their development presents great challenges. These are inherently complex, multiphysics systems in which many parameters remain uncertain or only partially understood. Achieving reliable, high-performance operation requires meticulous design and engineering across a wide range of disciplines. At the same time, cost constraints demand careful performance optimization: simply adding operational margin is often prohibitively expensive, making the search for the optimal design a critical part of the development process.

As one of the first lectures in this series focused on superconducting magnet test stands, this talk will provide an introduction to essential concepts such as training and quench, and will frame the critical role of testing in the broader magnet lifecycle. Drawing on my experience in magnet design and construction, I will outline the key information that designers and builders need from testing facilities in order to refine designs, ensure reliability, and ultimately enable the construction of affordable and effective superconducting systems.

About the speaker:

Susana joined the CERN magnet group in 2010 to work on the preparation activities for the Large Hadron Collider (LHC) First Long Shut down. In 2012 she started working in the Magnet Design and Technology Section, on the development of high field Nb₃Sn accelerator magnets. Susana leads now the HL-LHC WP3 (link), in charge of the IR magnets for the upgrade in the LHC. She is also responsible for the Large Magnet Facility section at CERN, overseeing the construction of magnets and cold masses for the HL-LHC project.

Presenter: IZQUIERDO BERMUDEZ, Susana (CERN)