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Cryogenic cooling systems for LTS and HTS devices

Wednesday 4 June 2025 16:30 (1 hour)

About the lecture:

This lecture provides an introduction to the various cryogenic cooling methods used to operate superconducting systems, whether small or large, HTS or LTS, from the smallest pick-up coils for medical applications to the largest magnets or detectors for high-energy physics. The lecture is aimed at physicists and engineers working in the fields of applied superconductivity and interested in the principles of cryogenic heat and mass transfer associated with the cooling technology used for superconducting magnets and other systems. For each cooling method and technology, the course will present the concept, the reasons for its use and the implementation strategy in the superconducting applications considered. For each case, one or two examples will be detailed. The course will cover the various methods of cooling superconducting systems, such as conduction, bath, forced flow, circulation loops and heat pipes with a cryogen or cryocooler as the cold source.

About the speaker:

Bertrand Baudouy has been working in the field of cryogenics for 30 years, mainly on experimental heat and mass transfer associated with cooling techniques for superconducting magnets or other cryomagnetic systems. He is involved in the study of helium heat transfer under reduced gravity and in the development of heat pipe technology for cooling superconducting magnets, cavities and space applications.

Presenter: Dr BAUDOUY, Bertrand (CEA Paris-Saclay)