

Lehrstuhl für Oberflächen- und Werkstofftechnologie



What is the origin of the universe? What are materials

made up? Does dark matter indeed exist?

High tech particle accelerators are vital machines made of superconducting radiofrequency (SRF) cavities which accelerate charged particles for high-speed and high-energy particle collisions result in immense data to be analyzed in order to answer such aforementioned fundamental questions. The R&D in materials used for SRF cavities is essential step to develop such systems further. Dr. Antoine, C. Z., who works at CEA-Irfu /University of Paris-Saclay and having more than thirty years of experience in surface and material studies for SRF cavities, is going to give a talk on:

"Superconducting RF cavities for accelerators: material and surface issues"

highlighting the details of technological bottlenecks to be targeted in order to develop SRF cavity components of particle accelerators.

ABSTRACT: "The use of superconducting material instead of copper for the fabrication of accelerator RF cavities allows the building of particle accelerators with improved and cost saving performances. In the RF regime, superconductor are not resistanceless but nevertheless exhibit ~ 5 orders of magnitude better quality factors compared to Copper. The few remaining losses appear in a few 10s of nm of the surface, so that the optimization of superconducting cavity requires advanced knowledge in material and surface science. This seminary will present briefly the challenges that have been faced and met in the past, as well as the prospective in this domain , with the development of new superconductors especially tailored for RF applications. Indeed the requirement for such material is totally different from the superconductors developed for e.g. superconducting magnets and SRF R&D explores a totally different type of materials."

Address: Paul-Bonatz Campus, Room: PB-A-118. Date: Wednesday, July 27th (17:00-18:00).

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