AIW 2: Medical Applications – Accelerators in the Service of Health

Time: Wednesday 15:55–17:20 Location: BAR/SCHÖ

AIW 2.1 Wed 15:55 BAR/SCHÖ

Find your way: Career orientation and support from the DPG — •Gabriele Becker — Advisor to the DPG Board, Bad Honnef

Invited Talk AIW 2.2 Wed 16:00 BAR/SCHÖ

Accelerating Research with Particle Accelerators — •Christoph Quitmann — RI Research Instruments, Bergisch Gladbach

Particle accelerators are fundamental for our understanding of the universe and for improving the human condition. Whether you want to understand the standard model of particle physics, sterilize surgical instruments, polymerize plastics or cure cancer, you need a particle accelerator.

Working in the design, fabrication and installation of such accelerators requires teams combining the knowledge of all fields in natural science, engineering and computer science. This team then interacts with customers from all areas of science, technology and society.

It is possibly the most fun and diverse job awaiting any curious and engaged physicist.

Invited Talk AIW 2.3 Wed 16:20 BAR/SCHÖ

Advancements in Superconductor Technology for High-Energy Accelerators and Fusion Applications — •Klaus Schlenga — Bruker Energy & Supercon Technologies, Hanau

Progress in Superconductor performance was significantly challenged and influenced by requirements for large scale physics projects. Experimental Fusion reactors and Accelerators up to LHC used superconducting magnets based on NbTi wires, while ITER Toroidal Field (TF) as well as Central Solenoid (CS) magnets use Nb3Sn wires with technologies from the 1990ies. Exploiting further progress in wire designs the LHC High Luminosity upgrade progressed to Nb_3Sn wires with 3x the performance of ITER Nb_3Sn.

Magnets for next generation Fusion reactors challenge again cost and performance of superconductors. The talk will give an overview of current status and future outlook of wire and magnet technology including High Temperature Superconductors (HTS).

Invited Talk AIW 2.4 Wed 16:40 BAR/SCHÖ

Application of Electron Accelerators for the Crosslinking of Polymers in Industry — •Andreas Ostrowicki — BGS Beta-Gamma-Service, Wiehl

The modification of polymers using electron accelerators has evolved from a specialized niche to a versatile industrial technology with applications in numerous areas. This presentation introduces the basic mechanisms and polymer classes that are best suited for radiation crosslinking. Using examples from industry, it provides an overview of established and new applications and the technical implementation of irradiation. Current research results, challenges, and technological trends are discussed.

Discussion AIW 2.5 Wed 17:00 BAR/SCHÖ

Panel discussion: Accelerating Innovation – Industrial Applications of High-Energy Physics — •Christoph Quitmann[1], •Klaus Schlenga[2], •Andreas Ostrowicki[3], and •John Kettler[4] — [1]RI Research Instruments — [2]Bruker Energy & Supercon Technologies — [3]BGS Beta-Gamma-Service — [4]actimondo eG, Inden