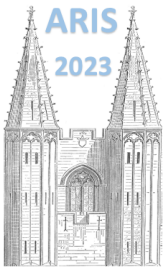

ID de Contribution: **311** Type: **invited presentation**

CERN-MEDICIS: a unique facility for the production of non-conventional radionuclides for medical research

vendredi 9 juin 2023 10:00 (25 minutes)

The MEDICIS facility is a unique facility located at CERN dedicated to the production of non-conventional radionuclides for research and development in medical imaging, diagnostics and radiation therapy. Located in a laboratory equipped to safely handle unsealed radioactive samples, it comprises a dedicated isotope separator beam line, a target irradiation station at the 1.4 GeV Proton Synchroton Booster (PSB), or alternatively receives activated targets from external institutes e.g. during CERN Long Shut-Downs. The target is heated up at high temperatures to allow for the diffusion and effusion of the produced atoms out of the target that are subsequently ionized. The ions are accelerated and sent through an off-line mass separator. The radionuclide of interest is mass-separated and implanted into a thin metallic collection foil. After collection, followed by a radiochemistry process when necessary, the batch is prepared to be dispatched to a research center for further processing and usage. Since its commissioning in December 2017, the facility has provided novel radionuclides including, but not limited to, Ba-128/Cs-128, Tb-149, Sm-153, Tb-155, Tm-165/Er-165, Er-169, Yb-175 and Ac-225 with high specific activity values, some for the first time, to research institutes part of the collaboration. CERN-MEDICIS'research and development around the topics of production, extraction and mass-separation is in constant evolution. The facility also contributes in the education and training of young researchers. Moreover, MEDICIS is one of the pillars of PRISMAP, a network of world-leading European facilities including nuclear reactors, medium- and high-energy accelerators, radiochemical laboratories and biomedical facilities. PRISMAP acts as a European platform for medical radionuclides and supports the ongoing research on nuclear therapy and molecular imaging by providing immediate access to novel radionuclides.

Author: DUCHEMIN, CHARLOTTE (CERN, Meyrin, Switzerland)

Co-auteurs: DORSIVAL, Alexandre (CERN, Meyrin, Switzerland); BOSCHER, Aurore (CERAP, Meyrin, Switzerland); JUIF, Benjamin (CERAP, Meyrin, Switzerland); CREPIEUX, Bernard (CERN, Meyrin, Switzerland); MARSH, Bruce (CERN, Meyrin, Switzerland); BERNERD, Cyril (CERN, Meyrin, Switzerland & KU Leuven, Institute for Nuclear and Radiation Physics, Heverlee, Belgium); MAMIS, Edgars (CERN, Meyrin, Switzerland & Intitute of Chemical Physics of the University of Latvia, Riga, Latvia); AUBERT, Elodie (CERN, Meyrin, Switzerland); CHEVALLAY, Eric (CERN, Meyrin, Switzerland); POZZI, Fabio (CERN, Meyrin, Switzerland); RICCARDI, Francesco (CERN, Meyrin, Switzerland); PRETE, Giuseppe (CERAP, Meyrin, Switzerland); GRENARD, Jean-Louis (CERN, Meyrin, Switzerland); RINCHET, Jean-Yves (CERN, Meyrin, Switzerland); VOLLAIRE, Joachim (CERN, Meyrin, Switzerland); THIBOUD, Julien (CERN, Meyrin, Switzerland); WENDT, Klaus (Johannes Gutenberg-Universitat, Mainz, Germany); LAMBERT, Laura (CERN, Meyrin, Switzerland); DESCHAMPS, Matthieu (CERAP, Meyrin, Switzerland); MUNOS, Maxime (CERN, Meyrin, Switzerland); KHAN, Moazam (Pakistan Atomic Energy Commission, Islamabad, Pakistan); MENAA, Nabil (CERN, Meyrin, Switzerland); FERNIER, Pascal (CERN, Meyrin, Switzerland); BERTREIX, Philippe (CERN, Meyrin, Switzerland); KHAN, Qaiser (Pakistan Atomic Energy Commission, Islamabad, Pakistan); ROSSEL, Ralf (CERN, Meyrin, Switzerland); HEINKE, Reinhard (CERN, Meyrin, Switzerland); MARTINEZ, Ricardo (CERN, Meyrin, Switzerland); CATHERALL, Richard (CERN, Meyrin, Switzerland); ROTHE, Sebastian (CERN, Meyrin, Switzerland); GILARDONI, Simone (CERN, Meyrin, Switzerland); MARZARI, Stefano

(CERN, Meyrin, Switzerland); STORA, Thierry (CERN, Meyrin, Switzerland); COCOLIOS, Thomas Elias (KU Leuven, Institute for Nuclear and Radiation Physics, Heverlee, Belgium); KHALID, Umair (Pakistan Atomic Energy Commission, Islamabad, Pakistan); FEDOSSEEV, Valentin (CERN, Meyrin, Switzerland); BAROZIER, Vincent (CERN, Meyrin, Switzerland); COLLABORATION, and the MEDICIS

Orateur: DUCHEMIN, CHARLOTTE (CERN, Meyrin, Switzerland)

Classification de Session: Friday

Classification de thématique: applications