

**The IMPACT-TATTOOS initiative as part of the substantial upgrade to the HIPA infrastructure at PSI**

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The High Intensity Proton Accelerator complex (HIPA) at the Paul Scherrer Institute (PSI), Switzerland, delivers a 590 MeV CW proton beam with currents of up to 2.4 mA (1.4 MW) to several user facilities and experimental stations. There are two neutron spallation sources, SINQ and UCN, two meson production targets, M & E, as well as, at 72 MeV, the IP2 isotope production irradiation station.

The IMPACT (Isotope and Muon Production with Advanced Cyclotron and Target technology) project is listed on the Swiss Roadmap for Research Infrastructures for advancements in particle physics, chemistry, materials science, life sciences, medicine, and clinical research. It consists of two initiatives, namely, HIMB (High-Intensity Muon Beams) and TATTOOS (Targeted Alpha Tumour Therapy and Other Oncological Solutions). HIMB aims to upgrade the Target M station, increasing the surface muon rate by a factor 100. TATTOOS will produce radionuclides for cancer therapy and diagnostics in doses needed for clinical studies, using a 590 MeV proton beam of 100  $\mu$ A, which is split off the main beam. Isotope selection will be performed using magnetic mass separation and RILIS (Resonance Ionization Laser Ion Sources), with the desired radionuclide further purified by chemical separation techniques. A new building for the endeavor is planned to be constructed in 2027. Beam on target is expected to occur in 2030.

This presentation will focus on TATTOOS and its motivation, concept and challenges towards the new high-power target facility.