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## The P3 experiment: a proof-of-principle e<sup>+</sup> source for future colliders

*Tuesday, 21 May 2024 16:00 (2 hours)*

The PSI Positron Production (P3 or P-cubed) experiment is a e<sup>+</sup> source and capture system with potential to increase by an order of magnitude the state-of-the-art e<sup>+</sup> yield normalized to the drive linac energy, a long-desired goal for future lepton colliders. The experiment is framed in the FCC-ee injector study and will be hosted at SwissFEL, located at the Paul Scherrer Institute in Switzerland. This paper presents the P3 project at an advanced stage, with an emphasis on a capture system featuring a novel e<sup>+</sup> matching device based on high-temperature superconducting solenoids, followed by 2 large aperture RF cavities surrounded by normal-conducting solenoids. The diagnostics design is also introduced, including monitors of charge, energy spectrum and bunch by bunch longitudinal profile simultaneously for secondary e<sup>+</sup> and e<sup>-</sup>. The last chapter of the text overviews the currently ongoing installation at SwissFEL, including the beam transfer line, RF network, radiation protection and other relevant activities towards the operation with e<sup>+</sup> in the coming years.

### Footnotes

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**Primary author:** VALLIS, Nicolas (Paul Scherrer Institute)

**Co-authors:** AUCHMANN, Bernhard (Paul Scherrer Institut); HAUENSTEIN, Dominique (Paul Scherrer Institut); ISMAILI, Eisa (Paul Scherrer Institut); MARCELLINI, Fabio (Paul Scherrer Institut); ORLANDI, Gian Luca (Paul Scherrer Institut); BRAUN, Hans-Heinrich (Paul Scherrer Institut); GARCIA RODRIGUES, Henrique (Paul Scherrer Institut); PEDROZZI, Marco (Paul Scherrer Institut); BESANA, Maria Ilaria (Paul Scherrer Institut); ZYKOVA, Mariia (Paul Scherrer Institut); SCHAEER, Mattia (Paul Scherrer Institute); SEIDEL, Mike (Paul Scherrer Institut); CRAIEVICH, Paolo (Paul Scherrer Institut); JURANIC, Pavle (Paul Scherrer Institut); ISCHEBECK,

Rasmus (Paul Scherrer Institut); FORTUNATI, Reto (Paul Scherrer Institut); ZENNARO, Riccardo (Paul Scherrer Institut)

**Presenter:** CRAIEVICH, Paolo (Paul Scherrer Institut)

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