

ACCELERATOR SEMINAR

Dr. Simon Hirländer

Uni Salzburg

Thursday, 5. November 2020 at 4 pm

Online Seminar via Zoom
(ID: 910 9647 6888/ PW: 017869)

Towards Artificial Intelligence in Accelerator Operation

Artificial intelligence found its entrance to the control room. In this seminar, we will present the application of reinforcement learning (RL) at particle accelerators and the advances within the last two years after its start at the CERN accelerator complex.

In the 2018 ion run, numerical optimizations were applied to achieve the highest reliable and stable performance. Particularly in the Low Energy Ion Ring (LEIR), where optimizers rapidly corrected drifts and recovered the performance, typical in the low energy regime. Shortly after, the first successful deep RL experiment was applied to LEIR. This led to the development of new applications of RL on the CERN accelerators, which will be addressed.

An introduction to the RL state of the art methods will be given with emphasis on the challenges in real-world accelerator applications.

Finally, the latest results from successful experiments at the FERMI XFEL of highly sample efficient, uncertainty aware model-based RL methods are presented.



Coordinator: Anja Seibel, Janet Schmidt
Secretary: Larissa Birli

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