Contribution ID: **38**   Type: **Poster**

Feedback Optimization on the EuXFEL Electron Dump Beamline

At the European XFEL, the main beam dump serves to absorb all electron bunches that are not required for the downstream scientific experiments. Due to the large beam power of the accelerator, controlling the dump temperature is a crucial component in its operation. Currently, this is done in an open-loop feed-forward manner. However, due to unforeseen drifts and changes in the setup of the accelerator, sporadic manual interventions by the machine operators are necessary to maintain regular operation, binding attention that could be spend better on other tasks.

For this reason, we present *feedback optimization* as a powerful and flexible solutions to automatically control the beam position along the main EuXFEL electron beam dump line. Two variants are investigated, model-based relying on the *Cheetah* particle accelerator optics simulation and model-free learning the model response over time, and the controller has been evaluated on the accelerator successfully.

Authors: HESPE, Christian (DESY); KAISER, Jan (DESY); LÜBSEN, Jannis (TUHH/DESY); MAYET, Frank (DESY); SCHOLZ, Matthias (DESY); EICHLER, Annika (DESY)

Presenter: HESPE, Christian (DESY)

Session Classification: Poster session