

New Generation of LLRF and Beam-Based Feedback Stability Models

All RF groups in the accelerator community use modeling to some extent for LLRF development, and LBNL has traditionally invested a significant effort in this area for a number of reasons. It is possible to solve many issues in the control algorithms in a comfortable software environment, often well before the availability of production systems. Software and hardware designs can be combined in simulation, easing the transition to final hardware system integration. Over time we have built a solid base of generic models which can be applied to a variety of machines and configuration schemes. The low-level implementation of the models has been re-implemented and extended to include elements in beam-based feedback loops and optimized to improve computation speed, memory usage, scalability and flexibility. The way they are configured and interact with high-level software has been greatly improved to provide clean APIs and a convenient configuration scheme accessible from user-friendly tools such as GUIs and websites.

Primary authors: QUEIRUGA, Alejandro (University of California Berkeley); DRIVER, Daniel (University of California Berkeley)

Co-authors: SERRANO, Carlos (LBNL); DOOLITTLE, Lawrence (LBNL)

Presenter: SERRANO, Carlos (LBNL)