

# Low Level RF Workshop 2022



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## A tutorial on control methods for Low Level RF accelerator applications

*Tuesday, October 11, 2022 11:20 AM (1 hour)*

I will review several characteristics of low level RF (LLRF) control problems in accelerators and discuss control design methods that are well suited to these problem classes. The methods, and their key features are: i) Iterative learning control, which adapts to correct persistent disturbances in repetitive or pulsed operations; ii) Robust control with uncertainty quantification, which attempts to generate a series of models of decreasing uncertainty levels; and iii) data-driven modeling and control, which can generate predictive control strategies without explicit model formulations.

Each method will be presented in a tutorial fashion, using LLRF examples and experience where possible. References to relevant papers will be provided.

**Presenter:** Prof. SMITH, Roy (ETH Zürich)

**Session Classification:** Beam Measurements and Feedback Control

**Track Classification:** Low Level RF Workshop 2022