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## Directly driving GHz-range power amplifiers with RF systems-on-chip for the SLS 2.0 longitudinal multibunch feedback

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In the past, the longitudinal multibunch feedback (MBFB) at the Swiss Light Source (SLS) storage ring had used an analog upconverter to translate the output signal of a 500 MSample/s DAC to the 1.25-1.5 GHz operation frequency range of the longitudinal MBFB kicker magnet and its power amplifier. For SLS 2.0, we have investigated the possibility to drive the power amplifier of a newly designed kicker (operating at 1.75-2 GHz) directly with the multi-GHz / multi-GSample/s DACs of an RF System-on-Chip (RFSoc). First lab test results with the new SLS 2.0 kicker magnet and its power amplifier are presented. Related methods for RFSoc-based bunch-to-bunch crosstalk compensation in the presence of transient beam loading and 200ps range arrival time variations along the bunch train are also presented. Moreover, the latest status and plans for our MBFB firmware/software implementation on an RFSoc will be given.

### Footnotes

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

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