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MEASURING AND CONTROL EQUIPMENT ON THE RFSOC FOR HOBICAT FACILITY

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Controlling SRF cavities in CW mode in the presence of mechanical disturbances, as well as in the presence of noisy detectors, makes control still a challenge. Internal cavity features such as Lorentzian forces are well understood and predictable, but also make control difficult. An inexpensive solution for compact accelerators that can accommodate many algorithms simultaneously on a single board at an affordable price is RFSoC. Their analog circuits are not yet accurate. Nevertheless, a significant reduction in development time can be achieved through an integrated architecture, as well as development tools available on the market.

The following will present the RFSoC control hardware with a focus on basic functions, implemented primarily as a firmware solution. The scope of functions is as follows: VNA measurements to determine resonator quality factor and S-parameters, PLL, control in the presence of noisy detector data, and adaptive RF/piezo control. The results of their tests on the Hobicat test facility will be shown.

Keyword

RFSoC

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