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Status report of the eRD109 project on SALSA chip development

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EPIC DAQ/electronics WG meeting
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■ SALSA1 prototype

- Radiation tests: finally foreseen 29-30 June in X-ray generator close to Saclay (SOLEIL facility)
- Reactivation of SALSA1 test-bench ongoing for the TID tests, improvements added with unified test scripts and measurement of all probes
- TID tests on PRISMEv1 will be done later, may be after Summer



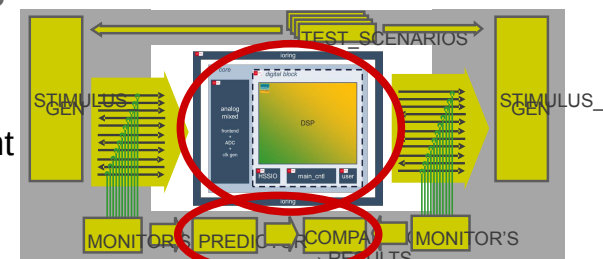
SALSA2 development status

- Front-end:
 - Whole schematic done, including 2 x 16-channel blocks + service block (bandgap, biases, probes)
 - Whole layout mostly done, fine tuning ongoing, next step is post-layout simulations
- DSP
 - Updates done on some modules: calibration sample flagging, management of reset fast commands, pattern generation; statistics data to be done
 - First trials of synthesis; power consumption still being evaluated
 - Tests of code in FPGA: packet generation and multiplexing ok, next step: activation of processing modules
 - UVM: workspace done, all agents implemented excepted wishbone for SC, by-pass scenario tested ok
- I/O core
 - RTL code done and tested
 - UVM: workspace done for I/O, validation started, in particular synchronization of I/O links
- Control core
 - Implementation of fast command decoding still ongoing
 - Decoding of asynchronous slow-control bit done, to be checked
 - Centralization of counters ongoing, simplifies architecture and communication between DSP and control core
 - To be done: packet generation for monitoring and slow-control data
 - UVM: integration of control core ongoing, agents to interact with core done
- Floor plan: difficulty to get bumps with MPW, discussion ongoing with CERN/IMEC

Timeline

- Chip submission foreseen November 2026
- Tests from Spring 2027
- Distribution to users expected from Summer 2027

UVM
environment





■ eRD109 FY24 project milestones

- SALSA2 specifications → July 2024
- SALSA2 submission → November 2026
- Beginning of SALSA2 tests → Spring 2027

■ eRD109 FY25 project milestones

- SALSA3 design specifications → aiming Q4 2026 (after SALSA2 submission)
- SALSA3 submission → Spring 2028
- Performance evaluation → 2nd semester 2028

■ Very next steps

- SALSA1 tests → TID tests end of June
- PRISMEv1 chip → TID tests after Summer ?
- SALSA2 development → in progress