LD2603 Q2 Report - Multiple Mode Excitation System for Processing Multicell SRF Cavities

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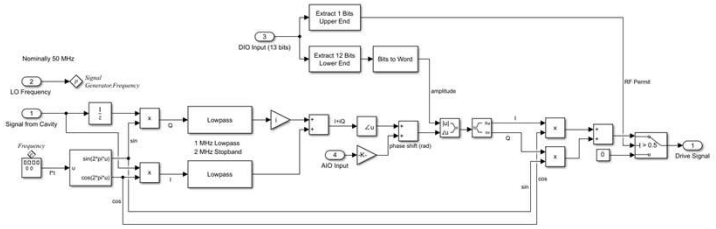
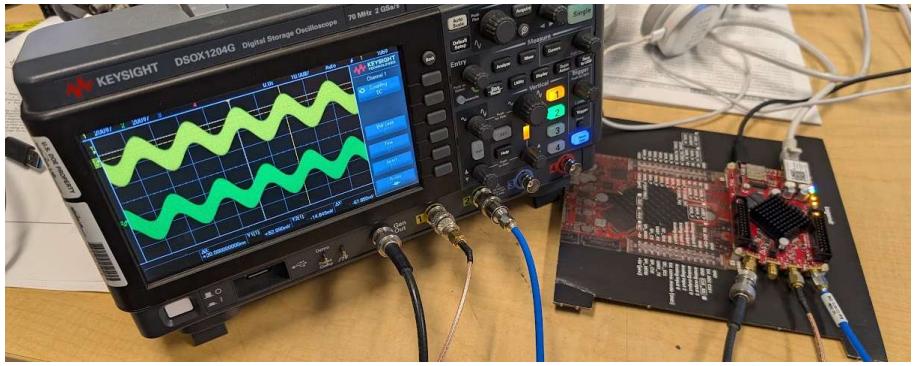
- **Progress**
  - Low-Cost RF FPGA – Red Pitaya
  - Implementing Cavity Control Loop
  - RF system ready to upconvert from 10 MHz to drive cavity in VTA
- **Next Steps**
  - Try advanced signal processing tricks on cavities in VTA (LabVIEW+Matlab)
  - Adapt Multi-mode control demonstrated last year to suppress Mode-mixing in LCLS-II cavity tests
    - Direct benefit to SRF cavity production
  - Continue building Red Pitaya control scripts
- **Issues**
  - Time constraints with other projects and end of the SAM
  - Red Pitaya is powerful, but not much 1st or 3rd party support for our custom functions, much trial + error in code development
  - PI going on Parental Leave in mid-April, planning to allocate work to ensure progress continues





Work funded by Jefferson Lab LDRD

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- **Financial Report**
  - Using cheap FPGAs, not much spent on hardware so far
  - Labor is the primary expense, constrained by other work demands
  - Current Spending $27.5k (Feb ‘26)

WBS 1.04 Accelerator LDRD Projects
FY26 Period 03 - December 2025

Multiple Mode Excitation System for Processing Multicell SRF Cavities-2
Peter Owen - LD2603 - WBS 1.04.LD.015.002

	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26
YTD Spending	0.000	7.717	16.774	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pending	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Obligations	0.000	0.000	0.540	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Expenses	0.000	0.391	1.887	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Labor	0.000	7.326	14.347	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding	186.9	186.9	186.9	186.9	186.9	186.9	186.9	186.9	186.9	186.9	186.9	186.9

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