**Unfinished tasks from FY16**

1. Construct (2) sets of dual cables with lengths adjusted to operate on λ/2 resonance with tuned NMR circuit (RL CL).

* Waiting on length information.

1. Install a precision (temperature –stabilized) shunt to directly read current from Oxford supplies that drive the magnets used for NMR –one shunt for each NMR rack.

* Procured one CAENels CT-BOX–After extensive research of precision current measurement systems.
* Procurement of 2nd CT-BOX is pending approval.

1. Update existing NMR analysis codes to the newest version of Mathematica. (e.g. Version 5 to version 8, or the most recent Jlab supported version).

* Analysis codes:
* General Polarization Data Analysis Package June 2008.nb
* Inductance Jlab Target Reference.nb
* Inductance LEGS Target Reference.nb
* Parameters from Resonance Curves v1.nb
* RF Birdcage Coils.nb
* KK transformation-Craig.nb
* Polarized Lineshape Analysis v1.nb
* Information required from BNL not available.
* Craig Thorn retired from BNL Sept 2016 leaving Mathematica unable to be updated.

1. As a Debug/Test exercise, take resonance scan data (with HDIce help), run programs and fit the resonance curve to deduce circuit parameters.

* Completion of the Mathematica upgrade necessary before this task can be started.

1. Re-activate online noise analysis VI.

* Task to be completed during NMR program re-write.
* Code development needs input.

**Tasks we are presently working on for FY17**

1. Updating drivers from GPIB to VISA.
2. Installing NMR rack.
3. Syncing new cRIO 9035 to IBC as trigger.

**Tasks we are planning to work on for FY 17**

1. Install and test NMR instrumentation into the 2nd rack in the HDice lab. Debug any instrumentation or software issues. Electrically isolate the instrumentation from the rack frame.
2. Install and test IBC pump cart cRio processor.
3. Upgrade of the base LabVIEW software on the IBC pump cart host computer.
4. Installation and test of the real-time operating system on the new cRio processor.
5. Upgrade, debug, and test of the IBC pump cart control program to the latest version of LabVIEW.
6. Integration, debug, and test of the IBC pump cart control software on the cRio processor.
7. Update, debug, and test all NMR instrumentation device drivers to LabVIEW 2016.
8. Update, debug, and test all NMR code to LabVIEW 2016.
9. Revise Polarization program to allow the option of using the new Oxford Mercury iPS power supplies.
10. Develop, test, and debug CT-box triggering schemes (both hardware and software) for NMR instrumentation during scans. The current NMR program does not save power supply current with the buffer data from the Lock-in amplifier.
11. Update, debug, and test 2nd RF attenuator/splitter box (currently used in HDice Lab).
12. Update RF box test programs to include exercising new instrumentation features.
13. Construct (2) Sets of dual cables with lengths adjusted to operate on λ/2 resonance with tuned NMR circuit (RL CL)
14. Debug and test online LabVIEW noise analysis VI during NMR scans.
15. Update all NMR LabVIEW instrumentation drivers to VISA. The current GPIB drivers have shown intermittent stability issues.
16. The NMR program should be totally rewritten / reorganized. The program has had many different programmers working on it and none of it was ever documented. The program has no incorporated subroutines, but is a jumble of sequences within sequences.
17. Consolidate the RF Splitter / Attenuation box communication interfaces (RS-232 and RS-485) into a single communication interface.
18. Revise RF Splitter / Attenuation box to add local status readback capabilities. Currently, the box and the front panel are only updated when the NMR LabVIEW program is running.