Tasks for the LISE++ development assistance group

Facility for Rare Isotope Beams, Michigan State University, East Lansing, MI 48824 USA

2023

Week 17 (04/24/2023)

Aaron

- Codes and output files should be separated for each step
- Provide output files for all request codes
- Copy all output files and code in the corresponding lise_development folder

- reminds for steps:
- 1 - avoid Zabbix
- 2 - sort data by codes to new files corresponding to the code
- 3 - eliminate all lines with requesting FIGURES, ICONS, CSS, COUNTERS and so on for "code 200" file
- 4 – split "code 200" file
    - o - Mac downloading code
    - o - Linux downloading code
    - o - Windows downloading code
    - o - visiting first page "lise.html"
    - o - general LISE site visiting
- 5 - get information (one request from user per day) for each of 5 files "code 200"

- Think
- 6 - prepare list of absent links "code 404"
- 7- find solution to get fast DNS-address from IP-address

Daniel

- Complete migration to Qt 6.5
- Merge official and sql versions
- Analyze Michelle's source
- Continue the sql project for isomers

Sasha

- Complete migration to Qt 6.5
- Merge official and local versions
- Improve Weekly report quality to clarify purpose, completed steps, next steps, problems

- Find out why Ssl is not supported in the LISE project though it is supported by all Qt network examples (not more than 4 hours)
    - o Google
    - o Play with openSsl

- Create "http" executable release version, which creates output resultfile in the LISE files folder
- Update LISE to read "http" result file in order to get new version information

- Then Instead "http" executable release version create "http" dll version and connect to LISE

Oleg's note

Michele's source for Daniel, develop group task weekly presentation, check Ssl support in another LISE package codes, create a LISE assistance page in LISE site

Monday meeting participants

Aaron, Daniel, Sasha

FRIB

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Week 18 (05/01/2023)

Aaron

- Continue previous week tasks

Daniel

- Complete the Database structure window
- Fix a bug with entry validation
- Clean debug lines
- Research: using dictionaries in C++
- Research: using doubles value instead strings for Energy (and T1/2?) in the Database

GLOBAL

- Merge official and sql versions
- Continue the sql project for the AME database

Sasha

- Research on Profiler and MemoryCheck programs for Qt-framework (1-2 weeks)
- Prepare a presentation on this study

- Try to apply MemoryCheck to the GLOBAL code in the LISE package
- Try to apply Profiler to the GLOBAL code in the LISE package

Oleg's note

Prepare the Request for Profiler study

Monday meeting participants

Daniel, Sasha

Week 19 (05/08/2023)

Aaron

- Continue previous week tasks

Daniel

- Keep work on Databases
- Research on Qt C++ and Qt Python connection
- Research on affect of computer Color scheme on LISE

GLOBAL

- Merge official and sql versions
- Continue the sql project for the AME database

Sasha

- Research on Profiler and MemoryCheck programs for Qt-framework (1-2 weeks)
- Prepare a presentation on this study

- Try to apply MemoryCheck to the GLOBAL code in the LISE package
- Try to apply Profiler to the GLOBAL code in the LISE package

Oleg's note

Monday meeting participants

Daniel, Sasha

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Week 20 (05/15/2023)

Daniel

- Correct the current AME database with initial one
- Migrate the AME database to MDB (SQL)
- Research on Qt C++ and Qt Python connection

- NEXT week discussion:
  it will be desirable to eliminate from d_Database.h

  char buff[100];
  TDBStruct transfer;

Sasha

LINUX research
- Valgrind
- **Kcashegrind**

Windows
- Install Visual Studio
- **Compile a couple Qt 6.5 examples with MSVC2019**
- Then try to compile the LISE project with MSVC2019

- Make research on old Windows profilers
  o WinCacheGrind
  o QCacheGrind

- Make research on modern Windows profilers
  o Visual Studio Profiler
  o Intel VTune Profiler

Improve weekly presentation quality!

Oleg's note

When it comes to modern profiling tools for Windows that are well-suited for analyzing Qt applications, I recommend considering the following options:

   JetBrains dotTrace: dotTrace is a powerful profiler that supports profiling .NET applications, including those developed with Qt. It offers both performance profiling and memory profiling capabilities. With dotTrace, you can analyze the performance of your Qt application, identify bottlenecks, and optimize your code. It provides a user-friendly interface with advanced visualization options, making it a popular choice among developers.

   Visual Studio Profiler: The Visual Studio Profiler is a comprehensive profiling tool provided by Microsoft. It supports profiling both managed (.NET) and native (C++) applications, including Qt applications. The Visual Studio Profiler offers various profiling modes, including CPU usage, memory usage, and more. It provides detailed performance analysis and visualization tools to help you optimize your Qt application on Windows. Since Qt has excellent integration with Visual Studio, using the Visual Studio Profiler can be a seamless experience.

   Intel VTune Profiler: Intel VTune Profiler is a powerful performance profiler that supports Windows. While it primarily focuses on CPU and GPU profiling, it offers features for analyzing and optimizing native applications, including those developed with Qt. VTune Profiler provides advanced profiling capabilities, including CPU profiling, memory profiling, and threading analysis. It can help you identify performance bottlenecks and optimize your Qt application for better efficiency.

These three profiling tools are widely used and have strong capabilities for profiling and analyzing the performance of Qt applications on Windows. They offer intuitive user interfaces, advanced visualization options, and support for different profiling modes. Ultimately, the choice among them depends on your specific needs, preferences, and familiarity with the tools. I recommend trying out each profiler and determining which one best suits your requirements in terms of features, ease of use, and integration with your development workflow.

Last week effort Logs

Finished CmSave, CmDelete, and CmAdd began work on integrating the database with database models other than 0.
Began work on changing GetDB to not use the .dbf file.
Completed research on using Python in a qmake file (added the project file into my project folder)

- Meetings and presentation on profilers
- Researching errors on forums
- Troubleshooting X Server and Linux installers + Ubuntu dead ends
- Finding packages and missing libraries

Monday meeting participants

Daniel, Sasha

Week 21 (05/22/2023)

Daniel

Optimization of database source:
- QString numberKillZero(double v, char ch, int k, int m=0); // only for 'f'
- qbuff = QString::asprintf("%lu", s_DBF>current_record);

Think about Isomer squeezing, erase couple columns (d_MRATIO, d_IT …)

- Migrate to accdb format from mdb format

Python & C++
- Check ability of use C++ & Python executable code without installed Python package

- Prepare for merging versions with gitHub

Sasha

- Update the presentation, In presentation write tasks, conclusions (in each page?)
- Copy the presentation to LiseDev folder

- Check with Qt Performance analyzer "calculate All nuclei"

- Compile LISE with MSVC (start with examples)

- Kcashegrind?

- MS windows profilers

- LISE for GitHub

- Improve weekly presentation quality!

Oleg's note

- Try Daniel's color scheme in the current LISE package version
- LISE++ → Move to gitHub

Last week effort Logs

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Week 22 (05/30/2023)

Daniel

- PACE, GEMINI for AME database
- Update the isomer database

- Continued research with using python scripts, and came to the conclusion that python has to be installed locally.
- Did some more work on fixing the color palette primarily adding in colors for disabled features.
- Did research on db size difference between accdb and mdb (mdb is smaller).
- Wrapped up work on the AME database integration all that is left is one issue with the CmSave function.

Sasha

- Install github
- Make repo from LISE github link
- Lear how to use github with creation of your own project

- Research on different profilers
- Testing LISE with initial Very Sleepy Windows profiler
- Installation and configuration of Intel VTune Profiler
- Going through and understanding various analysis methods, timelines, and graph details for cache usage and CPU utilization

Oleg's note

Tuesday meeting participants

Weeks 23-24 (06/12/2023)

Daniel

- Machine learning Meeting on Wednesday

- Prepare LISE git with your updates, send mail

- Add gamma-lines in already existed isomers in the database

Week 22:
I think I finished work on PACE might have missed something. I began work on Gemini. I converted the chart tbl file into a .accdb file and integrated it. I then integrated the AME db. I began work on the other 2 tbl files we use. Fixed the palettes for both programs. Fixed some bits of the AME code, and pushed it to the GitHub. The AME on the GitHub is currently a bit broken(in the finder function the bool should be bool&) I will push the fix for it once I am done with Gemini, and can push all of the changes without breaking something(I should have made a branch, but I forgot).

Week 23:
Finished up Gemini (AME DB portion now runs about 5x quicker). Haven't pushed the changes yet I will do it Monday after the meeting. Began work on Adding more isomers to the isomer database.

Sasha

- Create a html-page with link xls-file with description. Screenshot of xls file in this page

- Excel-file – formatting, company, info about compatibility with QT

- LISE package with profilers? First tests.
  May be use some small program as CHARGE

- Decide what profiler is more optimal to use for LISE

Week 22:
- Attended meetings and created presentations
- Installation of programs and transferring files to new computer
- Worked on finding compatibility with WinValgrind through Visual Studio Code
- Installed Deleaker profiler to run sample program with memory issue
- Installed Git and GitHub
- Followed tutorial to work with Git in Visual Studio Code terminal
- Troubleshooting through SSH key connection issues
- Ran Visual Studio performance analyzer
- Configured Unix environment MSYS2
- Installed Dr. Memory as a profiler for Visual Studio Code

Week 23:
- Meeting and presentation
- Research and creation of profiler comparison chart
- Installation and testing of MS Visual Studio performance profiler and toolsets, AQTime Pro, and Wonderleak programs
- Troubleshooting debug symbol package issues

Oleg's note

- Machine learning Meeting on Wednesday
- Create link for Sasha's analysis page
- Check details on student folders

Monday meeting participants

Daniel, Sasha

Week 25 (06/19/2023)

Daniel

current week tasks

- Isomer Database: continue working
- Try to find C++ equivalent for ML functions
- Python & C++ connection – example for ML
- Merge LISE versions (main & isomer_branch)
- Presentations for database, isomers

Last week report

- Continued work on adding cascading Isomers to the Database about half-way through the table of nuclides
- Updated Versions of all of my programs
- Removed the mass and mass_tf tabled from the AME database and added them to the GEMINI database(Will push changes after Monday's meeting)
- Found some machine learning examples from CMSE 202 they can be found in my project file in the machine learning examples folder. (Facial recognition, weather prediction, and number recognition)

Sasha

- Try "get_direction" Oleg's update, compare with previous results
- get_i_max…   optimization to call these functions
- Try to Get the hierarchy chart
- Play more, learn more
- Update html page : style, format, creator, description
- Put optimization results in html-page

- Attended meetings and created presentations
- Updated Excel Profiler Chart with additional information and more details
- Extracted LISE template style files and created an html page with link to excel .xls file
- Tested CHARGE and LISE programs with hotspot analysis feature in VTune and MS Visual Studio profilers
- Created setup instructions for Intel VTune profiler
- Researching and troubleshooting missing .dll files to show source code in profilers

Oleg's note

Create link for Sasha's analysis page

Provide parallelization books

Complete "main" branch update, push to github

Merge versions (Daniel)

Provide PID experimental data

Prepare GLOBAL_calibration example

Monday meeting participants

Daniel, Sasha

Week 26 (06/26/2023)

current week tasks

Daniel

- Avoid dbf using
- Avoid transfer.chr in database dialog
- Optimize your counters
- Use different name for tables to keep several open databases
- Formatting
- No more structure databases
- DBF files can be erased from the package?

Sasha

- Compile LISEcute with MSVC2019 (currently MinGW) – research, google, chatGPT

- Try to get a flow chart (may be another profiler)
- exp2l and log2l – is it possible to optimize
- Get_i_xmin – optimize? Source of this function itself, or maybe decrease number of calls

- To research profilers use the code GLOBAL, then go to LISE++

- We need to Optimize the LISE speed
- Think about parallelization

Oleg's note

- Check LISE for DBF
- Sasha's html
- Books

Last week report

- Finished adding the cascading isomer levels to the database

- Merged lise versions

- Fixed bugs/errors with the lise code

- Researched Machine Learning in C++

- Began installing Tensorflowlite as of submitting there are still errors when attempting to configure it and the .dll and lib files are inaccessible.

- Attended meetings and created presentations.

- Researched html basics and updated Profiler Page template. Changed logos, descriptions, and tested the display of different file formats.

- Solved source code display issue within Intel VTune Profiler through QT LISE debug settings and additional configurations.

- Ran a hotspot analysis of LISE program, identified sources of high CPU usages, and optimized function "get_direction_array" in new version 16.15.17.

Monday meeting participants

Daniel, Sasha

Week 27 (07/03/2023)

Daniel

- Migrate to Qt 6.5.1 (libraries are not compatible with 6.5.0)
- Create beta-branch
- Migrate GET_DB → GET_DB_AME, GET_DB_DAK → GET_DB
- Avoid using mass functions with DBF use
- Isomers (D. knows)
- When the beta-version will be ready, then move to the main branch

- Learning possibilities of Machine learning with C++

- Getting a source with chatGPT

Sasha

- Write conclusions
- Assist with installation of the Performance validator
- Improve the presentation layout
- Pptx → pdf, connect these pdf-file with your html
- Summarize results through html-file using links on pdf
- Tell, then you will be ready to move it on LISE site
- Keep going leaning the profiler, try to find points for optimization
- Getting a source with chatGPT

Oleg's note

- Think about get_direction_array optimization
- Start to work with Daniel on the beta-version
- Install the Performance validator
- Send Qt editor-setting : CTRL-A → CTRL I

- Prepare documentation for a new task : LISE for Excel → writing Qt dll and connect with Excel-64

- Fixed the index error in Gemini
- Removed Dak_chart.cpp in Gemini
- Changed d_Database.cpp to use QStrings instead of transfer.chr___
- Looked at o_Isomer.cpp and L_Isolite.cpp, but got stuck because I don't know where they are used
- Began work on w_Graph_DB.cpp
- Qt issues will discuss during Monday meeting

- Created presentations and attended meetings.
- Troubleshooted LISE MSVC compiler issues and warnings.
- Updated and organized LISE packages and necessary libraries in file system by compiler.
- Tested Relyze, AQTime Pro, and Very Sleepy for function hierarchies.
- Working through and contacting support on new profiler Performance Validator x64.
- Researching debug symbols (gdwarf, gstabs, coeff).
- Researched QT functions exp2l and log2l to find best way of reducing calls.
- Researched QT Concurrent and walking through examples of run(), map(), and mapped().
- Optimizing get_i_xmin and get_i_xmax with Intel VTune Profiler.
- Updated profiler chart, image, and html page with new additions.
- Getting started with parallel computing textbooks from lab and learning R language and MPI system features.

Monday meeting participants

Daniel, Sasha

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Week 28 (07/10/2023)

Daniel

current week tasks

- finish SQL-project regarding to git-business

- Machine learning (2-3 weeks pending)

- Create DLL in Qt   (int A = A + 2)   → test.dll

- EXCEL64 → VBA ->connect dll → use for calculations

- Documentation for the new version with SQL databases

Last week report

- In LISE did some stuff relating to Get_DB_Dak, but stopped
- Made sure Gemini calculations are accurate
- Continued Machine Learning research
- Abandoned TensorFlowLite in C++ and moved to python
- Made some examples of a neural network being used to perform calculations
- Read articles pertaining to machine learning and calculation acceleration
- Looked into gpu acceleration (This could be important depending on how complicated the models get)

Sasha

- Create additional threads to optimize using QtConcurrent

- Try to optimize distribution2:: getxmin, getdiriection

- Continue learning profilers

- Install the profiler on Oleg's comp

- Created presentations and attended meetings.
- Updated HTML Profiler page with new table formatting.
- Created powerpoints for each profiler and attached as pdfs to page.
- Resolved symbol issues with Performance Validator through email support and file management.
- Ran example programs and LISE_MSVC with Performance Validator to learn application and report hotspots and points of optimization for further development.

Oleg's note

Complete migration from dbf to sql

Set the threshold to display us-isomers in the table of nuclides

Optimize d2:get_directions

Link Sasha's presentation

Install profilers with Sasha's assistance

Monday meeting participants

Daniel, Sasha

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Week 29 (07/17/2023)

Daniel

current week tasks

- EXCEL64 → VBA → connect dll use for calculations

- Documentation for the new version with SQL databases

Last week report

- Made a simple .DLL file and Played around with it in QT

- Setup VBA in Excel. Excel can't find the DLL file no matter what I try.

- Almost finished adding even more isomers to the Database

Sasha

- Design Studio → learn more, connection with Qt C++ Widget, as how to take object from Design Studio
- Programming in 3D- space (X,Y,Z) in Qt Design Studio
- Chart details for inter2_new & inter2_old
- Try to make some C++ source optimization for get-direction and inter2
- Find out with glo_Range issue?
- Keep thinking of parallelization
- ---
  - See tasks on Oleg's column

- Start of full session hotspot chart with details on Inter2 callees and callers

- Method and plan specified with QT Concurrency version of program using hotspots detailed in chart.

- Introduction to 3D beam dump assignment with QT Studio Design. Going through project examples, code samples, documentation, and watching videos.

- Creation of FRIB logo animation to get familiar with and learn Design Studio.

Oleg's note

1. Installation of Profiler
2. Tasks from previous weeks

-------- Sasha's Wednesday tasks

1. download v. 16.16.6

2. check again inter2
3. MakeUniform

4. conclusion for Profilers!

5. ----------------------

6. balls --> executable (deployment)

7. ball closer for final point

8. desirably FRIB letters (probably from bottom in random order interval 0.2 s)
9. 1. one palette
10. 2. black color when all letter stay in row

11. freeze balls for couple seconds

12. balls go back to corners

13. and infinite loop

Monday meeting participants

Daniel, Sasha

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Week 30 (07/24/2023)

Daniel

current week tasks

- dll for Excel : double argument case, two arguments, return double
- LISE site statistics
- Learning GlobalCalibraton.xlsx
- Learning LISE MC output file

Last week report

- • Did various dll related tasks the key takeaways being:
- • the missing dll is missing because it is used for 32 bit systems
- • If you have all dependencies in the folder your library is in VBA will use them instead of looking into the system files
- • Updating lise in excel to be x64 compatible only would involve making the .dlls for x64 and adding PtrSafe to the VBA code.
- • Read a few more machine learning papers the main one being: https://www.mdpi.com/2227-7390/9/12/1384.

Sasha

- ○ FRIB logo : delay 2 sec in "final" logo position
- ○ Create FRIB logo executable module (.exe)

- ○ Profiler – get charts for
  - • Inter2_new
  - • Inter2_old
- ○ Compare get_direction_array speed for two solutions: double[] vs pointer

- Attended meetings and created presentations
- Assistance in installation of Performance Validator profiler
- Developed and discussed profiler chart presentation, went over questions and suggestions
- Developed faster testing process with profiling sessions
- Optimized functions (get_direction) with hotspot chart
- Session result comparison with versions 16.16.1, 16.16.4, 16.16.6
- QT Design Studio project development and timeline animation research (FRIB Logo)
- https://lise.nscl.msu.edu/LISEprofiler/Profilers.html

Oleg's note

Name	Title	MSU Classification
Sherrill, Bradley (M)	University Distinguished Professor of Physics, Associate Lab Director for Users	Univ Distinguished Prof-Tenure System
Tarasov, Oleg (M)	Senior Research Physicist	Senior Scientist FRIB-Continuing
Elkin, Aaron	Student Research Assistant I	Student Research Assistant I
Kaloyanov, Daniel	Student Research Assistant II	Student Research Assistant II
Richardson, Isaiah	Graduate Assistant	Research Assistant II
Watters, Shane	Graduate Assistant	Research Assistant II
Haak, Kenneth	Graduate Assistant	Research Assistant III
Berryman, Jill (M)	Manager for User Relations	Senior Specialist Outreach
Tarasova, Sasha	Student Research Assistant II	Student Research Assistant I

Monday meeting participants

Daniel, Sasha, Gerald Hoskins

Week 31 (08/01/2023)

Daniel

current week tasks

- Continue analysis of lise site statistics log
- Study previous experience with LISE statictsics excel file

Last week report

- Made a VBA excel that takes in two double values
- Began work on the lise site statistics data
- Learned to open files in python with with the open() command. (this was necessary because the original access logs were to large for excel)
- The anomalies around January 12th 2023 discussed on Thursday seem to possibly not be anomalies
- Began work on converting ips to dns addresses(in hopes that the dns address would provide more info on what happened around Jan 12th)
- This was going to take a while so I began looking into multi threading on python
- Multi-threading proved to be a waste of time and it would have probably been quicker to just start the code on Friday night. (Currently my program is predicted to finish in 15-30 hours --the multi threading helped slightly--)
- Couldn't understand the last two tasks given last week. (GlobalCalibration.xlsx couldn't be found and I don't know what LISE MC output is)

Sasha

- alignB : time analysis
- Details for non-LISE contribution in chart flow
- Charge states: time analysis

- Creation of Executable for FRIB-balls

- Extended FRIB logo animation and modified timeline based on requests
- Start of generating executable animation by troubleshooting versions and missing files on QT Creator
- Created and analyzed new testing procedures for LISE profiling sessions
- Added comparisons and results of new tests on multiple functions to optimization chart presentation
- Updated html profiler page with description, conclusion, and link to optimization results
- Analyzed and discussed performance of different versions of get_direction_array

Oleg's note

Provide LISE_site database
Global Calirbation excel
Tell Sasha regarding the file used in the Balls animation

Monday meeting participants

Daniel, Sasha

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Week 32 (08/07/2023)

Daniel

current week tasks

- Continue the LISE site statistics analysis
- Join with original LISE database
- Take into account statistics for first months of 2022 from access_log.14 in/lsedev/_Oleg
- Attend the LECM

Last week report

- Summary: Did a lot, but didn't get very far
- Further filtered data
- Created a function that tried to fix the massive spike around Jan-12-2023
- Much later came up with a theory about what the spike might be (discuss more during weekly meeting)
- Created a Domain getter and converter
- Used Said Functions to attempt to get users across the world
- When comparing current data to previous data there were large differences
- Learned to make api calls using python
- With making api calls to ipinfor.io grabbed the country and org associated with said ip
- Have begun trying to use the org info to determine private or research, and if research what lab or location
- Made an OS column some of the Linux one are a bit iffy
- There are ghost ips not to sure what to do about them
- Played around with Lise a bit
- Current Most Refined file is in the Lise_Statistics folder in my project folder

Sasha

- Is it chance to check time consumption with/without polynomial optimization?
- Prepare nucleusReglage details
- Go to Abrasion-Ablation optimization
- Do not forget the FRIB balls project

- Version 16.16.16 development with function inter2 modified through line time analysis
- Speed factor for different versions comparison for charge and no charge states
- Remake of profiler chart presentation to separate functions into additional slides and update statistics based on version 16.16.20
- Analysis presentation created for performance requests of 6 additional functions
- Performance comparison between different versions of get_i_xmax/xmin and inter2
- Research QT Design Studio and Creator crossover through cmake and qmake. DS scratch project created to experiment with file transfers.

Oleg's note

- Read all Daniel's csv files
- Find optimum way to join the databases

Monday meeting participants

Daniel, Sasha

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Week 33 (08/14/2023)

Daniel

current week tasks

- Analyze "old" counter statistics for 2022
- Prepare file with unique IPs (send info)
- Merge with LISE database together with Oleg (Thursday?)
- Learning SpecTk. Think to be responsible for this software package
- Data analysis with "ARIS-offline" server?

Last week report

Lise-Stats:
- Split the data up as talked about(might have forgotten one if I did please remind me)
- Cleaned the data up a bit
- Added whether an IP is private or phys in the 'brunch' column (was it supposed to be branch?)

Misc:
- Read a bit about neural network hidden layers
- played a bit with monte-carlo (I have some questions because I forgot how to do stuff)
- Goal for before Friday:
- Make a very simple neural net for PID just to see if it works

Lecm:
- Went to talks about LANL on wed after meeting
- Thursday attended part or all of the following: isotopes and applications, Time projection, Radioactive Decay Station, ISLA, Theory alliance and Isotopes and applications again.
- Friday last bit of ATLAS Status and then everything after the break.
- Looked over some white papers in preparation for some presentations (ISLA and GRETINA didn't understand to much)

Sasha

- Make conclusions, outlines
- Speed Analysis : abrasion-ablation (1st priority), details for void AbraAbla::Calculate(void)
- Speed Analysis : extended files with big number of blocks (open, update). Two files.
- What is about FRIB balls???

- Development of new version 16.16.26 through implementation of polynom() function
- Analysis of pow_int(), both double and int, after reduction of repetitive calls
- Top time consuming functions evaluated after following call chains in profiling sessions
- Hotspots evaluated between different charge state testing procedures in version 16.16.26
- Version performance comparison with separate tests and systems
- Outside file management for Design Studio to troubleshoot project setup and connecting modules

Oleg's note
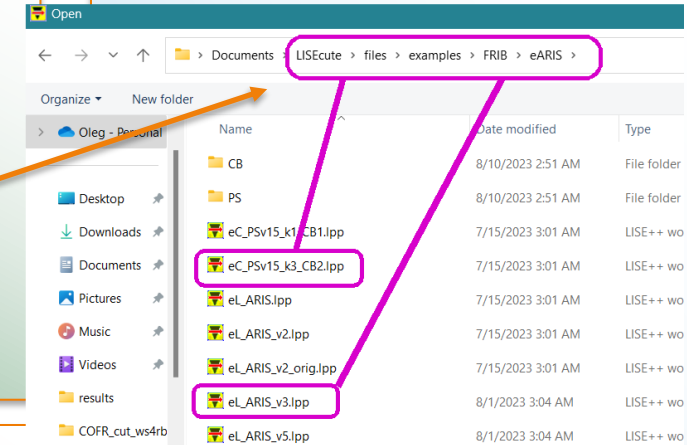
- Prepare old counter file (last version)
Including info up to 04/12/2022

* request to Mallory for Daniel's account

Monday meeting participants

Daniel, Sasha

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Week 34 (08/21/2023)

Daniel

current week tasks

- Merge Daniel-senior's branch
- Moving this Thursday
- Complete the Statistic folder with Python source
- Learn PID SpectTcl source :
  tcl – files (brief learning)
  (DETAIL learning)
  CARIS.h → CARIS.cpp , CARIS_PID, Length..
  Check all PID expressions Z, AoQ, A-3q, q from velocity (ToF, length), Brho (x,dispersion, Brho0), TKE (sum of energy loss in detectors) , EnergyLoss in 1st PIN detector
  → apply machine learning

Last week report

- Finished prepping the lise site stats as asked.

- Re-read the spectcl presentation but failed to install. It talks about a shell I need/ I can't find the spectcl folder.

- Attempted gpu acceleration, for machine learning, but my gpu won't be supported till fall.

Sasha

- Details for AA::Calculate
- Details for TShowBlock (Save Spectrometer)
- Details for AnalysisProductionTarget

- Create video from
  https://lise.nscl.msu.edu/paper/2018/2018_StaffInformationMeeting_v5.pptx (and upload to youtube in future)

- FRIB balls?

- Analysis of nucleusReglage() with charge_equilibrium test for v 16.16.34

- Top performing, core functions lists compiled using children call chain procedures

- Meeting for the examination of DB2VAL, DBVALU, DINTRV core function loop

- Abrasion-Ablation analysis using new testing procedure. Function performances compared across multiple versions of the program

- AbraAbla::Calculate() call chain evaluation for top children functions

- Research of ShellCorrect() optimization possibilities using LISE documentation

Oleg's note

- AnalyseProductionTarget (check it)

- Think about another file reading method
- Find_text_in lise pp (optimize)

- DBVALU optimization

- Integrators: Sec.Reactions, ETACHA, Radiation Calculator

Monday meeting participants

Daniel, Sasha

Week 35 (08/28/2023)

Daniel

current week tasks

- Learn SpecTclPID, pay attention for PID source

- Run 1571 (fragments up to db5)

Last week report

- Made the Downloads csv file and update a few others

- Merged the newest version of LISE in main into macos not to sure if it works though

- Continued to try to setup spectcl but am being denied permissions

- looked through the CAris.cpp and .h files

- Is there a way to run caris in a debug mode like in Qt?

Sasha

- New eARIS design dialog test

- FRIB balls : avi-file insert in PPTX, executable standalone mlode

- LISE 2018 presentation

- Charge state speed analysis across versions 13.4-16.17.2

- ShellCorrect() and Weitseker() function correction and performance check in v 16.17.2

- Abrasion test to compare versions following function optimizations

- eARIS speed test and hotspot overview for full open file process

- eARIS spectrometer design test to start development on block creation functions

- GetDeltaOddEven() and A_density() relations meeting

- AbraAbla::Calculate(), TShowBlock(), defineType_nm(), AnalyseProductionTargets() analysis

- Start of editing and adding captions to 2018 Staff Information Powerpoint

Oleg's note

- Tell when it will be good time to merge with MACos version

Monday meeting participants

Daniel, Sasha

Week 36-37 (09/11/2023)

Daniel

- PID SpecTcl test today at 5 PM
- SpecTk (Daniel, Tong)
- Work on SpecTk bugs

Week 36

- Continued Learning to use SpecTcl
- Learned a bit of tcl
- Looked into tcl->python (very short look)
- Continued looking at the CAris Code I am not to sure but I think I am missing a few .h files or at the very least can't access them

Week 37

- Looked at some of the ode code in LISE
- Continued looking into converting tcl into other languages this time c++
- Tried to better understand how the various tcl files and cpp files are connected
- Summary of tcl: converting it to cpp won't be hard the two difficult parts will be making the gui and just making sure the various files work together after the switch
- Attended a Machine Learning meeting

Sasha

- Profilers : Spectrometer >> ShowBlock -- details AA is pending from my site?

- Qt Design Studio : FRIB balls logo – in process Why? Where to use?

- LISE presentation (Laboratory wide meeting) → avi , what is status? Add your own voice comments, organize by timing intervals

Week 36

- Call chain presentation created with details on AbraAbla::Calculate() with significant line times and children hotspots for latest abrasion test
- Meeting on AbraAbla::Calculate(), A_density(), and GetDeltaOddEven() to compare performance between versions and offer suggestions on next steps for optimizations.
- eARIS Spectrometer overview with TShowBlock::MyPaint and SetGlyphs details. Blocks creation performance compared between modifications with goal met between v 16.17.10 and v 16.17.22
- New ARIS spectrometer analysis for el_ARIS_v3 test.: completed
- QT Design Studio and QT Creator animation project.: in process, Troubleshooting errors
- Replicating rough draft of FRIB Balls 3D animation, creating new materials on Photoshop for use as textures.

Week 37

- .qmlproject to .exe and .avi troubleshooting. Researching online, creating multiple templates, reaching out for help, and experimenting with 4 debug/release versions by organizing file structures and .dll dependencies.
- TShowBlock and TShowSetup analysis through new eARIS spectrometer version comparison v 16.17.15 and v 16.17.25
- eARIS and AA full testing sessions with function overview compilations
- New performance highlights with abrasion test for most recent version

Oleg's note

- List of SpecTk bugs
- Repeat the request for Daniel's cubicle
- Access for Daniel to go to the control room
- AA -- profilers

Monday meeting participants

Daniel, Sasha

Week 38 (09/18/2023)

Daniel

Sasha

current week tasks

- Keep learning and improving SpecTk
- Use only one folder SpecTk
- Merge DAK & Tong versions
- Menu About
- Compile and run SpecTk from DAK folder

- NOTE: create BACKUPS, be care about organization, structure of your projects, benchmarks!

- Create a diagram (sketch) of all your steps from Design Studio drawings to an executable module
- What another application from Qt Design Studio besides executable module?
- What is about square frame?
- Creation a Qt Creator project with Design Studio results --- Widgets, QML, others.
- LISE2018 :
  - Creation text to talk for each slide
  - Record sound files based on text for each slide
  - Define time for each slide

- Provide access to Daniel in the control room
- Assist Sasha with LISE2018 presentation text

Last week report

- Documented changes made to Spectk in the following doc https://docs.google.com/document/d/1q24UTdyi5SfZ3JIJ9DbuS9RIdqz2EYpF5OhO_u0uiWY/edit?usp=sharing

- Summary: 'Fixed" three bugs I haven't been able to test 2 of the fixes and the 3rd bug was just changing data names

- The 2 fixes and version change have been applied to the Spectk code in the lisedev folder

- Tried to get version 1.3.2 of Spectk to run not sure as to how to do this

- compared the 1.3 vs what should be the 1.3.1 versions

- Spectrometer dialog (blocks creation) optimization completed

- Version comparison with performance results

- Abrasion-Ablation test extra function details and suggestions. 1st part of Abrasion-Ablation has been completed

- Several meetings on learning file structure for integrating Qt Design Studio to Qt Creator. Research on kits and creating an executable release build. Remaking balls animation. In progress.

- Creation of video-version of LISE2018 presentation : in progress

Monday meeting participants

Daniel, Sasha

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Week 39 (09/25/2023)

current week tasks

Daniel

- Implement Tong's changes in 1.3.2 version
- Create new branch DAK on GitHub
- Continue to learn tcl/tk
- Keep going to work on 1D log plot
- May be think to use double 1.1 instead 1.0 for 1D?
- Just think how to use "current" spectrum name format, or do we need to rename all 1D spectra?
- Learn/Compare with Xamine
- Create a presentation for modifications based on the word file
- Optional : SpecTk page management
- SpecTk dialog "About": increment minor version to 1.3.2, add 2nd e-mail

Sasha

- Participation in the "Grace Hopper Celebration of Women in Computing" conference
  09/26 – 09/29, Orange County Convention Center, Orlando, Florida

- Continue to work on video-version of the LISE presentation

Oleg's note

- Control room
- Organize meeting to D.Bazin (to discuss modifications, and strategy)
- Prepare topics for discussion with Daniel B.
- Organize meeting to Tong (to update modifications)

Last week report

- Fixed the ExpandMinus Bug (not to sure why it works)
- Tried to fix the log bug I have some theories as to what is supposed to happen:
- Is it supposed to have 1E0 as the base and then add 1 to everything like Xamine
- The graphing library doesn't know how to deal with 0 values in log scales --- ?
- Because we graph counts which can only be whole values when attempting to graph zero we default to the closest whole value which is 1
- Where is the Xamine code ?
- (Not too important) Why does my cursor turn white in text boxes making it impossible to see where it is
- Began creating an about page, but one already exists. What edits should be made?

- Research on particle identification plots, as well as previous history and experiments

- Redesign of Staff Information presentation captions

- Updating isotope details on presentation

- Meeting to finalize captions and ensure understanding

- Creation of time slides and video recording in progress

Monday meeting participants

Daniel

Week 40 (10/02/2023)

current week tasks

Daniel

- update the presentation (SpecTk)
- Push SpecTk udpates to github as DAK brunch
- Prepare questions to Daniel Bazin
- Mobaxterm, Linux – find a file manager
- Think about attending the Lab on Thursday after 3 PM

Sasha

- Prepare a brief presentation about the conference
- Prepare and Show the LISE video-presentation draft before the Thursday meeting

Oleg's note

- Thursday after 3 PM – control room with Daniel

Last week report

- Fixed the Log Bug Finally
- Added the changes too both the word and pptx documentation files(links at the bottom)
- Looked at making tabs movable/nameable(just beginning)
- Tried too learn from the Xamine files, but they are all in C++, so they had a different solution
- Created a Documentation presentation
- Changed Version and added my email on the about window
- Word: https://docs.google.com/document/d/1q24UTdyi5SfZ3JIJ9DbuS9RIdqz2EYpF5OhO_u0uiWY/edit?usp=sharing
- PPTX: https://docs.google.com/presentation/d/1o-HqA8wSc4IL27_lxXwigTyHN7cj0XsWjW2R6J8M8R4/edit?usp=sharing

- Participation in the "Grace Hopper Celebration of Women in Computing" conference
  09/26 – 09/29, Orange County Convention Center, Orlando, Florida

Monday meeting participants

Daniel, Sasha

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Week 41 (10/09/2023)

Daniel

current week tasks

- Write e-mail to Daniel senior (Cc:Oleg, Tong Zhang, Tong <ZhangT@frib.msu.edu>) regarding to :
  - Permission to push DAK-version
  - Some questions
- Find out in portal.frib about the new FRIB power point presentation, and how to note a research grant
- **Start to work intensively with SpecTcl including the new version 24**
- Qt for SpecTcl?
- Organize github for this version based on projects/arisdaq/Oleg/v24

Last week report

- Have the Dak branch ready locally just need Daniel's permission to push it
- Tried to Get movable page tabs working, but I can't:
  - There aren't enough resources on line
  - I just don't understand tcl and SpecTk well enough yet to do it solo.

Sasha

- Find out how upload video on youtube

- Sound subroutine in LISE: win_util.cpp, wave files in intstall/lisecfg/sound

- Think about linux "profiling"
  - LISE itself
  - SpecTcl

- Restart of Design Studio 3D Animation build

- Animation consultations, loop and video research

- FRIB-Balls.exe - complete

- Staff Presentation work - in progress

Oleg's note

- Talk to Brad about Daniel's lodging for an U-test
- 3 PM Thursday: meeting in person with Daniel
- Github : talk to Elaine
- LISE video-presentation location : discuss with Brad
- Qt for SpecTcl

Monday meeting participants

Daniel, Sasha

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Week 42 (10/16/2023)

Daniel

Sasha

current week tasks

- Continue to explore SpecTcl, SpecTk, sorting

- Go inside SpecTcl c++ source. CARIS_pid

- Think how to use for MinGW and MSVC one installation folder for common use (ChatGPT, google) – regarding to compilation

- Start with examples QSound, use google, chatGPT

- It won't be easy → it's really a research

- May be rewrite some sound files

- Link on youtube's LISE2018-presentation video from the LISE site:
  https://lise.nscl.msu.edu/introduction.html

Tutorials, Presentations

- "How to Make Rare Isotope Beams at Home (LISE Package Video Tutorial)" @ YouTube by S.Tarasova, 2023

- "Making a ^{64}Cr beam with the FRIB Fragment Separator" - **YouTube** by M.Hausmann, 2020 (pdf 725 **kB**)

- "Making a ^{64}Cr beam with the FRIB Fragment Separator"

Last week report

- Began Work on trying to fix a bug- When any 1D log graph is updated through the update buttons it goes back to the old log bug.

- There is an *issue* where graphs are being calculated as being the same, Example db5.pin.dE and .E are the same graph when they used to not be. Also the y_vs_x/!eff

- Played around with SpecTk currently found one bug so far

- Review and proper upload of LISE video
- https://youtu.be/DGNMbkbzErl?si=NiZQFW_QUfanw1kr

- LISE 2018 Staff Information video - completed

- win_util PlaySound() QSound Research

Monday meeting participants

Daniel, Sasha

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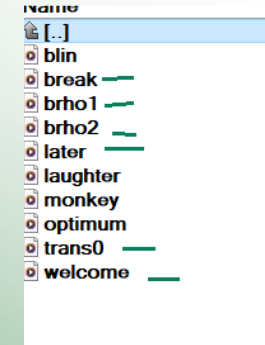
Week 43 (10/23/2023)

Daniel

current week tasks

- Copy windows files from Tong location to new SpecTk locations

- Short presentation about isomers (Thusday)

- Update SpecTk presentation / send link

- One sort shift in day (hard) time

- One long shift to work on SpecTk, PID, Optics

Last week report

- Finished working on the update bug and it has been added to the documentation doc.
- Played around a bit more with SpecTcl/Tk
- Looked into SpecTk with C++
- Almost finished the isomer database update, will push it late Tuesday.

Sasha

- Provide your source to lisedev folder

- Re-record all these wave files

- Make a short presentation

- LISE video –
  a. there is error ? *
  b. ^{60}Ca info
  c. 3rd issue (recording) *

- What is happen to youtube statistics if re-upload video

Name
- [..]
- blin
- break ──
- brho1 ──
- brho2 ──
- later
- laughter
- monkey
- optimum
- trans0 ──
- welcome ──

- Sound -> QSoundEffects and audio buffer output research

- Comparison between wave file class material and QSound documentation

- Loading and playing for win_util PlaySound()

Oleg's note

- Think about new SpecTk locations :
  one in /projects -- arisdaq, accelerator physics / users, accelerator physics / aris
  second – user/aris (Oleg) copy from the main location

- Prepare the bash shell (for fishtank)

- Develop the new assistance page

- Add SpecTk links to this page

- Provide information to Daniel regarding to incoming experiment shifts

- Ask Brad for LISE-youtube modification details

- Let's meet in person with Sasha to discus modifications

- Update LISE/Spectrometers page for ARIS and FRIB

Monday meeting participants

Daniel, Sasha

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Week 44 (10/30/2023)

Daniel

current week tasks

- Continue to work on tab re-arrangement

- Particular, to add "tab-menu" in SpecTk

- Merge with Oleg's version –
  - picture size, About dialog (date), ….

Last week report

- Made the Isomer presentation (lisedev)
- Slight update too the SpecTk 1.3.2 Presentation link: https://docs.google.com/presentation/d/1o-HqA8wSc4IL27_lxXwigTyHN7cj0XsWjW2R6J8M8R4/edit?usp=sharing
- Began and paused work on single tab addition and subtraction and git integration.
- Began work on tab rearrangement. There is quick fix that can be done with the file I work on a code fix.
- Began learning to make visual elements and a menu tab. (I want to make a drop down menu for tab control and then later git functionality)
- Participation in ARIS operations

Sasha

- Provide your "SOUND" source to lisedev folder (Onedrive)

- Make a short "sound" presentation

- LISE video –
  a. files from Brad
  b. links from Oleg
  c. re-upload the VIDEO

- Loading and playing sounds complete in LISE

- New audio files created

- Waiting on STUFLEX access and to drop files in directory

Oleg's note

- Think about new SpecTk locations : one in /projects -- arisdaq, accelerator physics / users, accelerator physics / aris second – user/aris (Oleg) copy from the main location

- Prepare the bash shell (for fishtank)

- Develop the new assistance page

- Add SpecTk links to this page, isomer's presentation, sound presentation

- **TARASOV-LAP2 - permit access for remote**

- LISE-youtube : insert reference on Ca-papers

- Let's meet in person with Sasha to discus modifications

- Update LISE/Spectrometers page for ARIS and FRIB

- Prepare beam-dump material for Daniel

Monday meeting participants

Daniel, Sasha

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Week 45 (11/06/2023)

Daniel

current week tasks

- Continue to work on tab re-arrangement

- Keep in mind the alphabetical order

Sasha

- Provide your "SOUND" source to lisedev folder

- Complete the last presentation page, show it

- Complete sound files creation

- LISE video –
  a. files from Brad
  b. re-upload the VIDEO

- Develop the new porting and assistance team sites

- FRIBlogo: icons, size (regrouping), only one window, floating menu (some settings, about),

- You should respond to use RC115575 instead of RC111450 for our grad students.

- Resolve the situation of week 43

- Copy porting and assistance pages to LiseDev

- FRIBlogo -- Brad

- Let's meet in person with Sasha to discus modifications

- Recheck LISE-video presentation

- **TARASOV-LAP2 - permit access for remote**

- Update LISE/Spectrometers page for ARIS and FRIB

- Prepare beam-dump material for Daniel

- Thins about new downloading page

Last week report

- Continued work on page reordering
- Made a read and write function and a couple more
- made a List class
- Learned that page name and page aren't the same example db4 is actually page2
- This ^ has lead me to believe that there is some internal way of keeping track of all objects, but I am sure it would be easier to just make my own thing.(no 2d arrays and dictionaries would involver looping through every object a couple times)
- currently the read function is reading but for some reason it isn't finding the line.
- When a reorder occurs should a save follow or would it be preferred not to
- What do I do about last weeks effort logs?

- Staff Information presentation updated

- MyPlaySound() presentation completed (-> LiseDev)

- Remaking LISE sound files and presentation recordings - troubleshooting audio playback

- Start of additional Logo application tasks

- Waiting for additional audio files and disclaimer information

Monday meeting participants

Daniel, Sasha

Week 46 (11/13/2023)

Daniel

current week tasks

- Starting the Beam Dump project:
  - understanding the project,
  - prepare questions
  - organize the meeting (with Marc,Oleg) in December to get answers

- Continue work on SpecTk sorting

Last week report

- Finished most of the back end of the tab changing code only part left required the front end to be done.
- Reading and writing in the correct order.
- Adding/Removing pages when adding it will always go to the end of the list
- Really close to finishing the front end.
- Currently alphabetic sorting is almost done but the last line of code is causing issues not sure why.
- Manual sorting has the ui done but when trying to use dropboxes errors are thrown.

Sasha

- Develop the new porting and assistance team sites, then the software downloading page

- LISE video –
  a. files from Brad
  b. re-upload the VIDEO

- FRIBlogo: size (regrouping), only one window, floating menu (some settings, about)

- OpenGL 3D for the Beam Dump is next

- LISE sound files compression troubleshooting and final review

- Video adaptation slide added and recorded

- FRIB logo application icon and menu tasks started

- Navbar updated for LISE assistance team html. New logo design concepts.

Oleg's note

- Next Meetings
  - This Thursday - without Oleg
  - Next Monday as scheduled
  - Next Thursday canceled
  - Next Next Monday – canceled
  - Next Next Thursday - without Oleg or canceled

- Effort log warning for the next week

- FRIBlogo -- Brad

- Update LISE/Spectrometers page for ARIS and FRIB

- Prepare beam-dump material for Daniel

- Think about new downloading page

Monday meeting participants

Daniel, Sasha

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Week 47 (11/20/2023)

Daniel

current week tasks

- In the case of bad local "contour" SpecTk gives message and stop loading. Write message that this contour was not loaded, and continue loading the rest of file

- Implement latest SpecTk updates in lisedev

- Complete tab sorting, complete the documentation
- Push your version to github

- optional: take Monday evening shift

Last week report

- Looked at some of the beam dump files
- Finished writing the code for the SpecTk tab swapping (not tested, but I am almost certain it will work)
- Haven't implemented said code because the remote computer is off or I just can't connect.

Sasha

- Develop the new porting and assistance team sites, then the software downloading page

- LISE video –
  a. files from Brad
  b. re-upload the VIDEO

- FRIBlogo: restore FRIB letters
  About dialog: use version-log-file, includes the date

- OpenGL 3D for the Beam Dump is next

- FRIB Animation about menu updated and speed menu changes with transparency.

- Application resizing with the window.

- Troubleshooting binding issues with timeline duration and slider settings.

- Waiting on files from Brad and Oleg for additional tasks.

Oleg's note

- Next Meetings
  Thursday canceled
  Next Monday – canceled
  Next Thursday - without Oleg or canceled

- Effort log warning for the next week

- FRIBlogo -- Brad

- Update LISE/Spectrometers page for ARIS and FRIB

- Copy the profiler page to lisedev

- Contact to Amy regarding student hours during 12/16-12/31

Monday meeting participants

Daniel, Sasha

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Weeks 48-49 (12/04/2023)

Daniel

current week tasks

- Continue work (study) on the Beam Dump utility

- Introduction to Beam Optics (pictures)

- Introduction to Abrasion-Fission (pictures)

Last week report

Week 47
- Went to the control room
- Released SpecTk 1.3.3(might change it to 1.4.0) it is now on github and the new version can be found in SpecTk_git
- Worked on the documentation for v1.3.3
- Tried to add a functional scroll bar, but couldn't figure it out (thismight be a goal for a future release)
- Continued looking through the beam dump files and played with LISE a little

Week 48
- Finished SpecTk v1.3.3 documentation (can be found in SpecTk_Dak)
- Continued BeamDump work
- Cloned the Excel file, but with monte carlo results I generated

Sasha

- Develop then the software downloading page

- LISE video –

    a. files from Brad

    b. re-upload the VIDEO

- FRIBlogo: restore FRIB letters, correct rescaling

- Troubleshooting FRIB letters disappearing when application window size changes. One line makes it disappear so playing around with alternatives without damaging structure of file all together.

- Timeline animation property research.

- porting_team.html and assistance_team.html matching theme completed, in lisdev folder.

- • Download index designs -- clarification

Oleg's note

- the new porting and assistance team sites
- FRIBlogo -- Brad

- Update LISE/Spectrometers page for ARIS and FRIB

- Questions from Daniel:
- Where can I find the equations that are used in the On BD Sheets to do all of the calculations
- What is FSD1_SCD1
- Do we only have one beam dump and where is it located
- How does the beam come into the beam dump slide 29 of T40510-MDE-0007-2200 slides
- On the main sheet of the excel files how are we getting the power absorbed, and why is the base power 3000 watts
- Check to see if I have the general idea of what is going on
- Looked and played with the Monte Carlo code a bit
- • Looked briefly at the Aris BD code

Monday meeting participants

Daniel, Sasha

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Weeks 50 (12/11/2023)

Daniel

current week tasks

- SpecTk: Working on Enable/Disable tabs
- Continue work (study) on the Beam Dump utility
- Introduction to Beam Optics (pictures)
- Introduction to Abrasion-Fission (pictures)

Last week report

* Continued work on the beam dump
- ARIS_BD utility has a bug I can't fix
- Was able to implement the scroll bar into SpecTk but the reorder broke
- Was able to figure out how to remove and add tabs

Sasha

- Modify a little bit the software downloading page
- FRIBlogo: resize, work on bugs
- LISE video –
  a. files from Brad
  b. re-upload the VIDEO

Oleg's note

- Update Sasha's downloading site
- Share Dainel's SpecTk version

Monday meeting participants

Daniel, Sasha

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Weeks 51-52 (12/19/2023)

current week tasks

Daniel

- SpecTk: Working on Enable/Disable tabs
- Continue work (study) on the Beam Dump utility
- Introduction to Beam Optics (pictures)
- Introduction to Abrasion-Fission (pictures)

Sasha

- Modify a little bit the software downloading page
- FRIBlogo: resize, work on bugs
- LISE video –
  a. files from Brad
  b. re-upload the VIDEO

Oleg's note

- Update Sasha's downloading site
- Share Dainel's SpecTk version

Last week report

51
Prep for experiment
• Participated in the experiment
• finished up SpecTk 1.4.0
• Began work on SpecTk 1.4.1
• Began work on SpecTk 1.4.0 Documentation
52
• Continued work on the SpecTcl Updating bug
• Possibly fixed the above bug(More testing is required as I don't understand what the fix does)
• Learned about Client Server communication
• Tried to replicate the bug emailed about but couldn't

Monday meeting participants

Daniel, Sasha

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