

Subject\*: [E-log Template] Day #: brief description of work

Summary/Conclusions/Future Plans:

# Elog Do's and Don'ts

body p

Gina Lorenz, Eugene Colla & PHYS403 team

PHYS403

# Summer 2020

Upload

Submit Save Preview Delete Draft saved at 13:10:56

# What's the point of the e-log?

- Provide ability to reconstruct sequence of work, calibration results, physics results, relevant boundary conditions such as temperatures, pressures, magnetic fields, distances, voltages, currents, ...
- Document lab-work within and outside regular class time
- If you came back to these notes in a few months, would they give you enough information to understand what you did that day?

# How to use e-logs

- At the beginning of the lab discuss with your lab partner the plan for the lab session and summarize it briefly in the e-log: what needs to be done next?
- During the lab, pause and summarize your work at natural stopping points in the action, for example, record PMT HV settings after you have determined the best settings.
- Along the way, save data, plots, scope shots to your folder on the server.
- At the end of the lab session, ensure the e-log provides a rather complete overview of the highlights of your work. Indicate future directions.

# Example of A “Good” E-Log

Experiment:	Alpha Range
Post Type:	Measurement
Subject:	Day 4
<p>Objective: Today's goal is to collect data again for the alpha range in Ar to compare with our results for before and investigate a peak above atmospheric pressure</p> <p>Today's Pressure: 756.1 mm Hg</p> <p>Pressure gauge: 737 mm Hg</p> <p>Offset: 19.1 mm Hg</p> <p>1:00-3:00 <b>Label times</b></p> <ul style="list-style-type: none"><li>• We plan on finding the range of alpha particles in Ar</li><li>• Source to Detector Separation Ar: 2.82 cm</li><li>• Filled and pumped the chamber with Ar 3 times to ensure purity.</li><li>• Recorded spectrum data for the range of pressures from 50 mm Hg to 771 mm Hg with a step size ~90 mm Hg. Filled in extra data points around areas of interest</li><li>• This time we used separate MCA plots for each pressure to get the exact time.</li><li>• Recorded the Peak Energy, the integrated number of counts, and the duration so we could plot <math>E^2</math> vs p and the Count Rate vs p</li><li>• We messed up, sample was too close to the detector so we only saw the linear portion of the count plot.</li></ul> <p>Trial 2</p> <ul style="list-style-type: none"><li>• Source to Detector Separation Ar: 4.07 cm</li><li>• Repeat same procedure.</li><li>• Count data was the best we recorded so far, however the <math>E^2</math> was not scaling correctly</li><li>• Did not up the Bias voltage, so the data will have to be scaled if we want to use it</li><li>• Will redo after tea time</li></ul> <p>3:00-3:40 Tea Time</p> <p>3:40-4:50</p> <p>Trial 3</p> <ul style="list-style-type: none"><li>• Source to Detector Separation Ar: 4.07 cm</li><li>• Repeat same procedure.</li><li>• Turned on Bias Voltage to 40 V</li><li>• <math>E^2</math> scaling and count rates were both right this time</li></ul> <p>Conclusions: On the work day we will fit our data to the formulas in the literature to calculate the actual alpha range in different gases. Change the scale on Trial 2 to match the <math>E^2</math> scaling.</p>	

Settings

Objective/Goal

Organize in sections

Records, comments

Note parameters

Summary/Conclusions/Future Plans

Experiment:	Fluorescence
Post Type:	Setup
Subject:	Day 1: Ruby 2 Decay Rate -- Cryostat

A short description is useful

Goal: Familiarization with cryostat equipment, measurement/determination of fluorescence decay of Ruby #2 samples

Data Path:

- \\engr-file-03\PHYINST\APL Courses\PHYCS403\Students\Simpkins\_Steven\Fluorescence

A data path is very useful!

Equipment List:

- Stanford Research Systems Model SR830 DSP Lock-in Amplifier
- Aligent 33220A 20 MHz function/arbitrary waveform generator
- Tektronix TDS 3201B Oscilloscope
- Fluke 77 multimeter
- Fluorescence Spectroscopy chamber in cryostat (polarizer, detector, light source filter)
- Ruby #2 sample and Rhodamine

If it helps, great, but listing all equipment is not necessary

13:00-15:00: Collected VDC (multimeter), VAC (lock-in amplifier), and phase (lock-in amplifier) at 15 frequencies in the range 20-300 Hz at 20 Hz intervals for Ruby #2 and rhodamine sample. Calculated modulation (VAC/VDC) and modulation ratio (sample modulation/rhodamine modulation). Fit relationship between modulation ratio and frequency and net phase (sample phase - rhodamine phase) and frequency to determine decay constant(s).

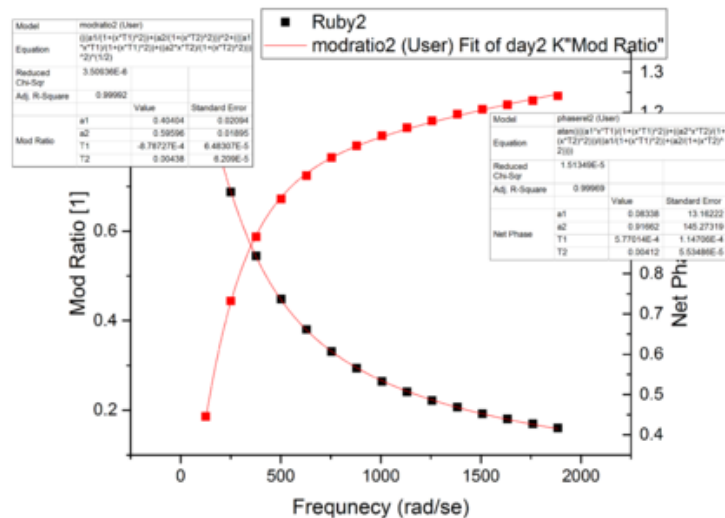
Bullet points would make this easier to read

15:00-15:45: Tea Time

15:45-17:00: Data fitting for new data collected as well as three parameter fit for previous data. The three parameter fit includes three different lifetimes for the decay of ruby #2. Corrected background subtraction in old data. Removed the subtraction of the offset from the AC voltage. Hooked up new digital multimeter for automated collection of DC voltage.

Summary: Setup the experiment in the cryostat and verified the validity of the cryostat setup by comparing it to the table-top setup. Future directions?

Attachment 1: Ruby2\_cryo\_300K.png 106 kB | Hide | Hide all



Include plots, photos, scope images when applicable

# Example of a “Bad” E-Log

Experiment*:	Gamma Gamma	Add Experiment
Post Type*:	Setup	Add Post Type
Subject*:	Experiment	Not organized in sections

Today we learned about the experiment. We took a long time looking through cables to get the right one. The computer program is very slow. Once we plugged the detectors in we figured out the voltages to optimize them. Detector A uses a different voltage than the other two. We got some data from the sodium sample but we need to retake it. We realized that A was switched with B, actually, so that may be reason. Either that or the second coincidence counter is broken.

After tea: No times No objectives No parameters, definitions

We switched A with B and now everything works. Took data from sodium:

0.5	20
0.6	21
0.7	20

Unlabeled, unplotted data

Got a good result. So moving on now to set up three detectors. Got part-way through, will finish next time.

Weak summary/future plans

# Example 2 of a “Bad” E-Log

Experiment:	Optical Pump
Post Type:	Setup and calibration
Subject:	Day 1: Calibration

Goal: Find experiment and begin setup and calibration.

Datapath: \\engr-file-03\PHYINST\APL Courses\PHYCS403\Students\Student #3

Setup:

1:00 — Arrived at lab, waiting on new experiment assignments.

1:30 — New experiment assignments released.

1:40 — Located experiment.

Read manual and inspected the setup.

2:20 — TA explains the operation of the experimental apparatus.

We continue reading.

2:40 — TA demonstrates setup and operation of the experiment.

3:00 — Tea time.

4:00 — Returned from tea, continued reading.

4:40 — TA explains calibration procedure and starts us out calibrating the current/field relationship for the sweeping coil.

We collected data for the following RF frequencies: 150 kHz, 100 kHz, 50 kHz, 25 kHz

4:50 — TA returns, we begin Horizontal field calibration.

5:00 — Partner leaves lab.

TA explains some Origin tricks.

5:06 — Equipment powered down. Computer powered down. I leave lab.

Too many irrelevant details

Not enough information

Generic goal, no summary / future plans

# Do

- Write it the same day
- Organize in sections:
  - Goal
  - Settings/Notes
  - Times & Records
  - Conclusions & Future Plans
- Be specific
- Label by time of each event
- Include exemplary plots
- Use the e-log as a tool to help you throughout the lab

# Don't

- Wait until the next day
- Write one big paragraph or go into irrelevant details
- Be general (“We learned about the experiment”)
- Indicate “when” with “after tea”
- Include long data tables (better to plot them)
- Leave e-log writing as an after-thought



# E-log Template

Author:	Virginia Lorenz
Experiment:	General
Post Type:	How-To
Subject:	[E-log Template] Day [#]: brief description of work

Goal: Be specific. Not, "Learn about experiment," but, for example, "In helium below temperatures of 2.17K, a second sound due to thermal effects becomes measurable. We will measure second-sound using a resonant cavity..."

Settings / Equipment Notes: Note important environmental and experimental parameters such as atmospheric pressure, settings on equipment, etc.

[Time 1]: Give time range, not "before tea."

- Note important steps and results.
- Include plots, photos, or scope shots in attachments below.

[Time 2]: ...

Conclusions & Future Plans: What did you find? Not, "We measured the decay times," but, for example, "Ruby #2 sample with higher concentration chromium was observed to decay with a form..." What is the next step (be specific)?

Before you submit your elog, be sure "Suppress Email notification" is selected below.