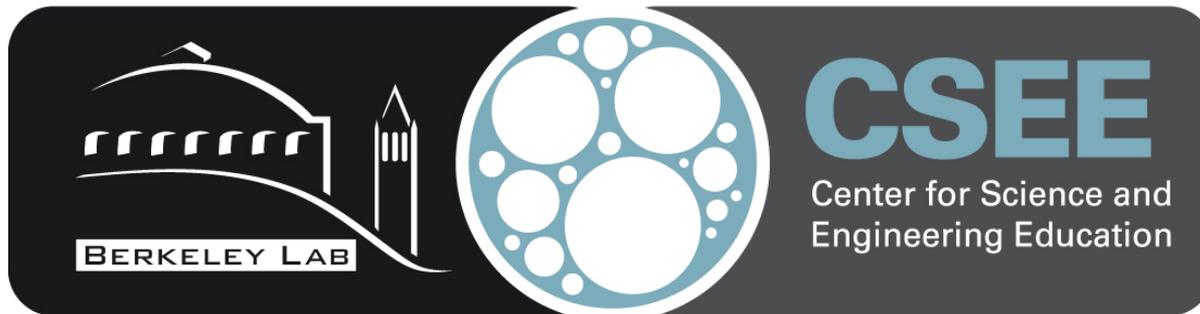




Developing a user friendly Mass-scan program in Lab View



Sam Bozek

HSSRPP, Advanced Light Source

August 8th, 2008

- **About Sam Bozek**

- Second Year of HSSRPP
- Graduate of Albany High School
- Freshman at Queen's University
- Pursuing a degree in Physics
- I get my own Tam O'Shanter soon. It's a Queen's thing.



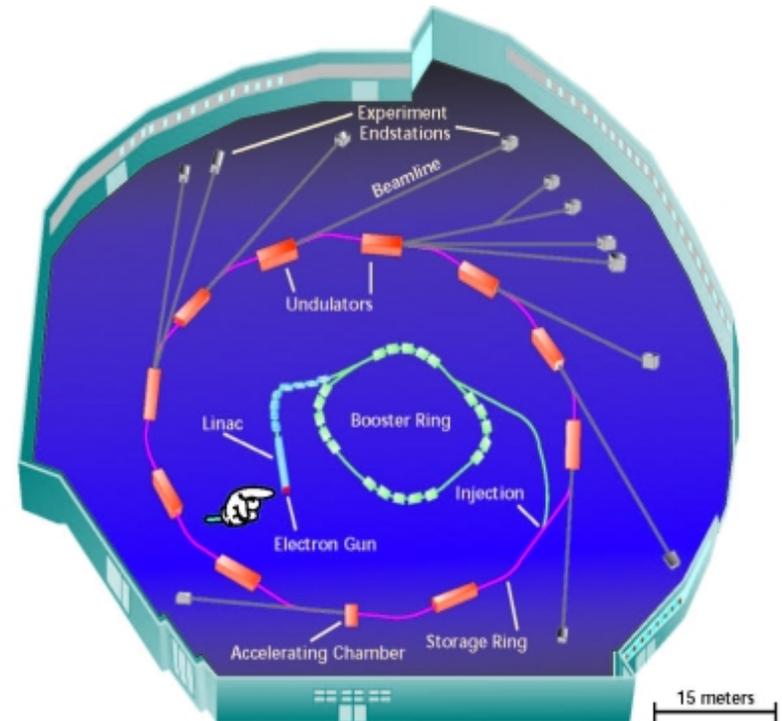
Advanced Light Source

- **ALS**

- Electrons traveling near the speed of light in a forced circular path emit UV and X-Ray light that then shines down Beamlines to experimental endstations.

- **Beamline 10.0.01**

- The Atomic, Molecular, and Optical Beamline





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- **The Equation**

- Using four equations ($F=qvB$, $F=m*v^2/r$, $E=1/2 * mv^2$, $E=q\Delta V$) one can derive an equation for a magnetic field that would force another ion along the same path an earlier ion traveled.
- This equation turns out to be:

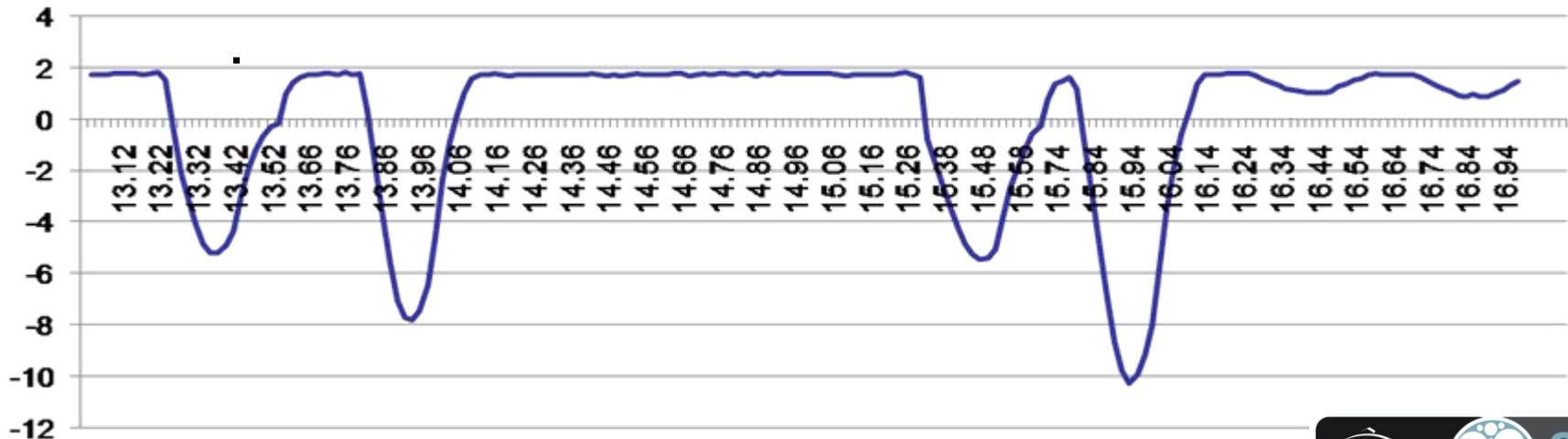
$$B_2=B_1*\text{sqrt}(m_2q_1/m_1q_2)$$



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- **Then...**

- After that, the data is read from the power supply and Keithley and then put into the program
- This gives a graph!
- Y-axis is current from faraday cup, X-axis is the power supply's current





LabView

- **LabView**

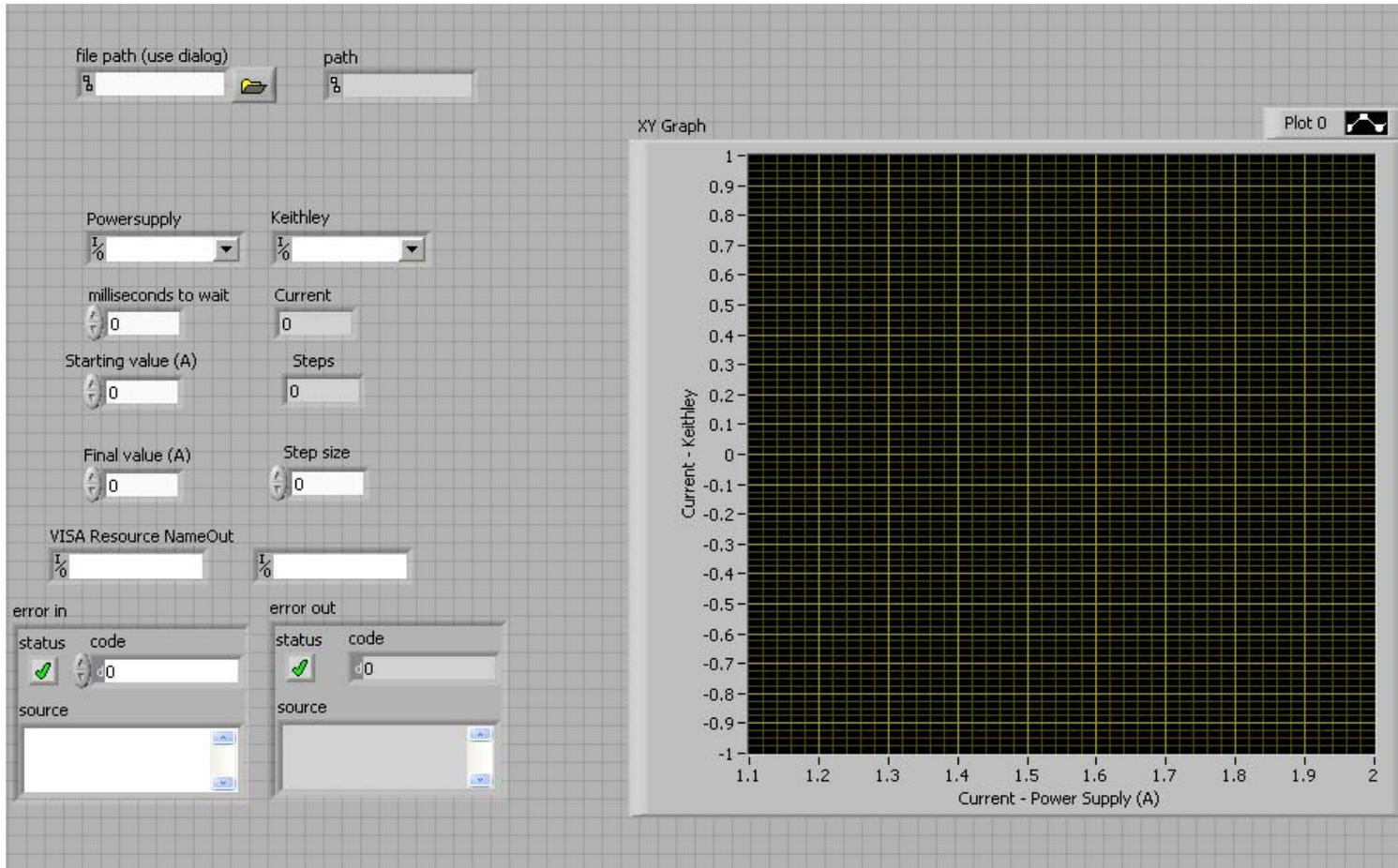
- Uses a graphical programming interface
- Can be used to communicate with a variety of instruments i.e. powersupplies, Keithleys

- **The Program:**

- Written in order to create a user friendly mass scan program that is adjustable.



The Guts of the Program





Acknowledgments

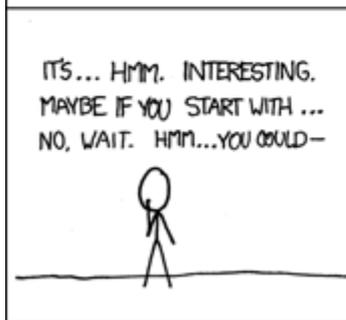
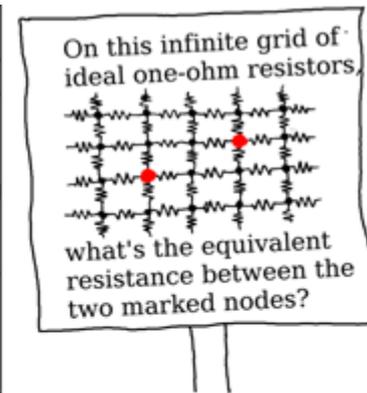
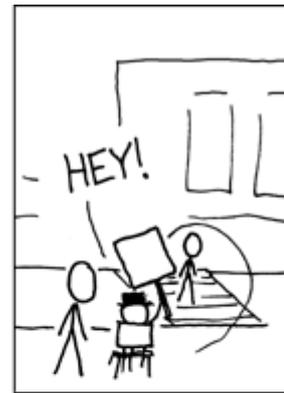
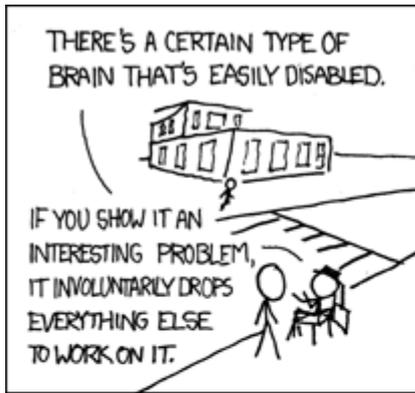
• ALS

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Questions?



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