

UW Physics Department

Independent Study SUM 2008 - SPR 2009

Instructor	Student	SUM	AUT	WIN	SPR	Project Description
Buck, Warren	Brooks, Keira	3				Study models of Saturn's moon Enceladus. The focus of this study is how the jets of water vapor, that are exiting the poles, are formed.
Olmstead, Marjorie	Christensen, Brett	2				Research literature and then design and carry out experiments to fabricate bulk crystals of assorted III-IV semi conductors, with and without transition metal doping. If successful, also characterize the best looking crystals.
Vilches, Oscar	Kim, Kristine	2				Measuring changes in Krypton gas, lowering the temperature of this inert gas and measuring the time it takes for a layer of atoms to bind on carbon nanotubes in a vapor chamber.
Blinov, Boris	Huson, Andrew	3				Assist graduate students in assembling and testing electronic components
Asbury, Charles	Huseby, Carol	5				Refine data collected last quarter for reanalysis of differences from earlier data run. Fourier transform? Continue creation of model and simulation of cellular oscillations and forces.
Brown, Michael	Pitts, Kristin	3				The project will involve improving basic laboratory skills and learning about transient grating spectroscopy, optical systems, and properties of condensed materials at high pressures.
Brown, Michael	Straughan, Kyle	2				Selecting, aligning, and mounting crystals for testing. Preparing samples for optical examination. Experimentation with mode-lock laser.
Garcia, Alejandro	Palmer, Andrew		3			Determine the mass of an excited state of ^{32}P with high precision to test the isobaric multiplet mass equation
Seidler, Jerry	Dickinson, Brian	3				The student will continue design and construction of a miniature x-ray spectroscopy.
Campbell, C	Schoenbaum, Carolyn	3				Investigate reactions catalyzed by solid surfaces. Monitoring chemical reactivity at metal/oxide interfaces. Improve metal nonparticles to resist sintering
Vilches, Oscar	Kim, Kristine		1			Will continue measuring adsorption isotherms, probably more Kr adsorbed or carbon nanotubes.
Vilches, Oscar	Hess, Holly		2			Learn about adsorption of Xe on Carbon nanotube bundles and participate measuring this adsorption. Investigate possibility of running an fancded adsorption system.
Sorenson	Sayres, Conor		3			Study brain physics
Blinov, Boris	Dostert, Chris		1			During my involvement in the lab, I plan on doing research on ion trapping and quantum computing.
Blinov, Boris	Riecken, Tom		1			I plan to get involved with Blinov's trapped ion entangled pair experiment. I have experience with CCD's and data analysis, and intend to learn about hardware and understanding the science a little better day by day.
Fortson, Norval	Meyer, David		1			Design and implement a data analysis program to determine pressure effects on the mercury absorption spectrum.
Chaloupka, V	Angel, Kristi		3			Research in physics of music and room acoustics
Blinov, Boris	Garcia, Frank		2			Continue development of quantum computer simulation; help with trapped ion experiment.

Tolich, Nikolai	Ramien, Natalie		1		Determine sensitivity of geoneutrino(?) experiments to measure the Earth's uranium and thorium content.
Gupta, Subhadeep	Odekirk, Dane		3		Design and build electronic components to control ultracold atoms experiment. Test and diagnose such components via experiment.
Wilkes, Jeff	Roma, Andrea		1		A continuation of work started last Spring quarter on the WACTA project. Work on documentation for procedures and software, as well as assistance to students and their teachers in assembling and maintaining their WACTA status.
Blinov, Boris	Avril, Aaron		2		Continue construction of pulse programmers for trapped ion quantum computing
Burnett, Thompson	Hanes, Scott		3		Miscellaneous task associated with FERMI, focused on developing a GUI to aid in the analysis of data from the satellite.
Gundlach, Jens	Wierman, Jennifer		2		Learning setup of experiments with the pore protein MSPA along with data acquisition and analysis.
Reinhardt, Bill	Schillaci, Cory		5		3D simulation of BEC dynamics
Schick, Michael	Wolowiec, Thomas		3		To extend a current phenomenological theory of phase separation in membranes to the case of coupled, different leaves
Hochberg, Michael	Spott, Andrew		3		I will be working on the testing of optical wave guides for the nano photonic group.
Asbury, Charles	Huseby, Carol		3		We are studying chromosome oscillations in mitosis. Through data analysis and modeling, we hope to realize the mechanisms controlling cell division.
Stetzer, Mackenzie	Olsho, Alexis		2		Teach one weekly tutorial section (Phys 123); attend weekly meeting; identify area of common student difficulty.
Vilches, Oscar	Kim, Kristine		1		Kristine will continue measuring adsorption isotherms, probably more Kr adsorbed on carbon nanotubes.
Chaloupka, V	Shriver, Gavin		3		Work on St. Marks Cathedral to resolve reverberation issues which hinder an audience's ability to hear spoken word clearly. Research topics included: acoustics, line arrays, circuits
Brown, Michael	Straughan, Kyle		5		Continue work on studying the elastic properties of minerals using Impulse Stimulated Scattering (includes optical works Nd:Yab laser works and use of the Pockel Effect)
Blinov, Boris	Shahar, Edan		2		Make electronic components to assist the trapping and measuring of qubits
Kaplan, David	Cooper, Charles		3		Planning to learn Lie theory as applied to particle physics (from text: Geongi)
Blinov, Boris	Biesiadzinski, Darek		2		Study general relativity using James Howtle's textbook as well as other references. Solve problems from the text, concentrating on the more involved and challenging problems.
Chaloupka, V	Shriver, Gavin		3		Continued work on St. Marks cathedral: programming/re-constructing DSP's for line arrays re-coming cathedral system..etc. Repairing amplifiers.
Blinov, Boris	Riecken, Tom		2		Work in Boris' trapped ion lab. Learn how to use various software for use in optics. Find out how to draft and then machine parts for the setup.
Blinov, Boris	Garcia, Frank		1		Assist graduate student (Matt Dietrich) with the construction of an external cavity diode laser system.
Blinov, Boris	Avril, Aaron		3		Continue assembling the pulse programmer from last quarter. If completed, program pulses for adiabatic passage in Barium ions

Heckel, Blayne	Glover, Ryan			3	Assist EotWash gravity group in date analysis and constructing apparatus
Vilches, Oscar	Hess, Holly			2	I will make substantial progress in the project of automating the gas deposition process through LabVIEW
Seidler, Jerry	Vander Giessen, Rachel			1	The student will write software to simulate determination of the energy spectrum of the Linoe Coherent Light Source
Asbury, Charles	Huseby, Carol			3	Analysis of hand-tracked kinetochore films in tissue-culture cells. MatLab simulation which output data is analyzed as real experimental data.
Morales, Miguel	Fiszer, Robert			4	Research on neutral hydrogen line and SRT telescope.
Raschke, Markus	Savacool, Michelle			4	Build a titanium-sapphire oscillator that generates IDFs laser pulses using chirped mirror technology.
Tolich, Nikolai	Mower, John			1	To become acquainted with RAT simulation software. In anticipation of greater things to come.
Tolich, Nikolai	Ramien, Natalie			1	Write computer program to study geoneutrinos
Gupta, Subhadeep	Odekirk, Dane			5	Design and build circuits and other components to enhance the capabilities and function of the atom trapping apparatus.
Garcia, Alejandro	Palmer, Andrew			3	Record decay rates to investigate possible correlations with solar flares. Prepare indium sources for irradiation. Help design and build a ^6He production chamber.
Heckel, Blayne	Lee-Wong, Eric			3	Model electric fields in Hg EDU vapor cells via finite element analysis. Work on Hg EDU experiment.
Schaffer, Peter	Stevens, Alex			1	1) Attend TA preparation meetings. 2) Teach in 2 tutorial during the quarter. 3) Write a paper synthesizing observations.
Stetzer, Mackenzie	Shimoji, Sheba			1	1)Teaching two 100 level physics tutorials, 2)Attending TA preparation meeting, 3)Writing a short reflection paper
Wilkes, Jeff	Wierman, Jennifer			3	Student will be assisting the newtrino research team with the construction and testing of new instrumentation.
Gundlach, Jens	Wierman, Jennifer			2	Work with the UW nanapore group-make setups of nanapores in an artificial bilanger, record data, special projects that come up
Hautala, Susan & Thompson, LuAnne	McHugh, Elizabeth			2	Read papers and proposals relating to proglacial lake freshwater outbursts into the northeastern pacutic. Installing and learning matlab via tutorials designing experiments of freshwater forcing in the NE Pacific based on an idealized model of convection. Displaying climate model results with matlab.
Lubatti, Henry	Zhang, Tracy-Ying			2	Study various PYTHIA simulations of Higgs production at the LHC.
Schick, Michael	Wolowiec, Thomas			3	
Sorenson, Larry	Sayres, Conor			3	Study brain physics
Morales, Miguel	Anderson, Brian			3	Work on GASE with matlab to look for a 'whistle'
Seidler, Jerry	Dickinson, Brian			3	Brian will assist with designs for minature X-ray spectrometers.
Blinov, Boris	Shahar, Edan			2	Assist graduate student (Adam Kleczewski) with ion trap work. Continue investigation into high-power 1762nm lasers

Gupta, Subhadeep	Odekirk, Dane				8	Teaching assistant and grader for Physics 331 Optics Lab (2 credits). Continued work in Gupta's lab developing control mechanisms for atom cooling apparatus (eg: RF circuits, Analog & Digital electronics, etc..) (6 credits)
Chaloupka, V	Shriver, Gavin					3 Finalizing work at St. Marks Cathedral (phase optimization of acoustreal sources & more) Other topics in acoustics and physics
Blinov, Boris	Shahar, Edan					3 Assist in getting the quantum octapole moment checked in Ba 137.
Buck, Warren	Miller, Matthew					3 "Exotic Atom Spectroscopy" - identifying what exotic atoms are in terms of quantum numbers that include spin, augular momentum, flavor, etc. - use of quantum mechanics as main tool and solving schrodinger equations will be the method to find energy states and distributions.
Vilches, Oscar	Savovic, Djordje					1 Building an automated adsorption isotherm apparatus working as a team with another student. May do other things to adjust to schedule.
Quinn, Thomas	Gray, James					2 Take a serial program for analyzing N-body simulations written in C and adapt it into a Python program which takes advantage of parallel computing using a map-reduce API
Wilkes, Jeff	Roma, Andrea					1 Continue visits to schools in WALTA system to assist in station setup and running in order to increase data being uploaded to UW WALTA site. Finish updating site documentation. Finish comprehensive site setup instructions documentation
Morales, Miguel	Anderson, Brian					3 Study gase data, learn about radio cosmology.
Wrede, Chris	Vander Giessen, Rachel					2 Reconstitute a Rutherford scattering setup at CENPA
Quinn, Thomas	Leigh, Joel					6 Implementation of the spectral energy distribution of an active galactic nucleus in a simulated image of a smoothed particle hydrodynamic model of a galactic merger.
Gundlach, Jens	Wierman, Jennifer					1 Various aspects with developing the protein pore MspA fo nanopore DNA sequencing.
Brown, Michael	Pilisuk, Josh					3 Preparing samples for experiments. Collecting data from running experiments. Troubleshooting various problems with equipment while doing experiments. Analyzing and presenting data.
Heckel, Blayne	Lee-Wong, Eric					1 Electric field design and several lab projects
Gupta, Subhadeep	Lee-Wong, Eric					1 Making circuit boxes, to control laser frequencies, intensity, etc.
Garcia, Alejandro	Palmer, Andrew					3 Investigate a possible correlation between the decay rate of ^{54}Mn and solar flares. Help build a reaction chamber for ^6He .
Stetzer, Mackenzie	Olsho, Alexis					2 Continuation of study of student understanding of interference and other concepts in waves and physical optics (and continuation of teaching in tutorials 12x)
Seidler, Jerry	Krah, John					2 John will assist with development of calibration software for X-ray spectrometers
Gupta, Subhadeep	Grad, Jason					1 Constructing electronics for controlling frequency and intensity of laser beams for atom trapping experiment.

Garcia, Alejandro	Bergsman, David					3	Set up detectors to determine the electron-capture branch of ^{116}In .
Gupta, Subhadeep	Schoenbaum, Carolyn					4	I plan to assist professor Gupta . TA the physics 331 optics lab.
Pengra, David	Pasko, Jim					1	Documenting the Franck-Hertz experiment at lower mercury pressures using a lock-in amplifier to observe additional excitations, with the ultimate goal of submitting this paper to a physics journal
Miller, Mike	Haycox, Willie					3	Help build and test low noise pre-amplifiers for general use in nuclear and particle physics.
Brown, Michael	Buchholz, Aaron					3	Trying to understand elastic properties of anisotropic crystals using impulse stimulated scattering (ISS). This involves orienting crystals using X-ray diffraction, measure velocities as a function of direction, and analyze results to get elastic constant tensor.
Tolich, Nikolai	Mower, John					1	Study light propagation in Monte Carlo simulations of new detectors.
Stetzer, Mackenzie	Shimoji, Sheba					1	Inspecting pretests on dynamics from a diversity of groups of people. Analyze their reasonings, short comings of traditional instruction, and what the statistics suggest. Teaching Phys 121 tutorial and giving a deep observation to the better methods of learning mechanics.
Asbury, Charles	Huseby, Carol					3	Chromosomes move in an oscillatory motion about the center of a dividing cell during metaphase. I am working on a mathematical model of this oscillatory system and the forces involved by components of the process.
Blinov, Boris	Avril, Aaron					3	Complete assembly and testing of the pulse programmer.
Wilkes, Jeff	Wierman, Kevin					3	help with work on neutrino experiments and WALTA