"All the ν's
That's fit to Print"

ΦYAST ΦLYER

The Department of Physics & Astronomy
The University of Oklahoma
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Dick Henry, Editor
Danette Miller, Production

ELECTRONIC PUBLISHING IS HERE: PHYAST ON-LINE

The newsletter, and lots of other Department information, is now accessible on the World-Wide-Web. The URL (Universal Resource Locator) is http://www.nhn.ou.edu/
Besides the newsletter, you can access things like the latest group photo of people in the Department, our graduate brochure, a discussion of our undergraduate degree programs, a picture of Professor Nielsen, home pages for several Department members, and much, much, more. Now what would you pay for? Just log on and have a look. Comments and suggestions for additions and improvements can be directed to **Andy Feldt** (feldt@nhn.ou.edu).

FALL COLLOQUIUM SCHEDULE

10/12/95 Bernard Pagel, NORDITA, "Chemical Abundances in the Universe"

10/19/95 Kieron Burke, Tulane Univ., "The Electronic Structure of Everything"

10/26/95 Bob O'Dell, Rice, "Exploring the Orion Nebula with the Hubble"

11/2/95 Jerry Simmons, Sandia "Solid State"

11/9/95 Brian Laird, U of Kansas, "Localization and the Glass Transition"

11/16/95 Lee Collins, LANL, "Atomic/molecular/chemical physics"

11/30/95 Maya Paczuski, Brookhaven National Lab, "HEP Theory"

LIGHTS, CAMERA, ACTION:

Hollywood Comes To Nielsen Hall!

The Physics Department had a little taste of Hollywood in early July when the movie stars and film crew arrived for the filming of the movie "Twister". Needless to say, the movie is about tornadoes and the storm chasers who track them. Helen Hunt and Bill Paxton are the main stars and rivals. Our building, Nielsen Hall, was used in three scenes -- outside shot as Bill Paxton and Jami Gertz (supporting actress) drive up; walking down the main hallway; and entering a third floor lab/office. Although the actual filming only took one day, preparations began several weeks earlier. OU Landscaping spruced up Nielsen Hall's outside by trimming trees while the advance film crew worked on the inside, transforming us into a meteorology department. Helen Hunt was not in our scenes, so we didn't get to meet her, but Bill Paxton was friendly and very accommodating with picture-taking and autographs, as was Jami Gertz. No physics people were used as extras, but that didn't prevent **Dr. George Kalbfleisch** from giving his advice to the director, **Dr. Pat Skubic** from attempting to become a cameraman, nor the office staff, **Linda Christie**, **Danette Miller** and **Grettie Bondy**, from eating a catered lunch for the movie crew! If the 45 seconds of film footage don't end up on the cutting room floor and the movie is released on schedule, you'll be able to point out your old stomping grounds to all your colleagues next Memorial Day!

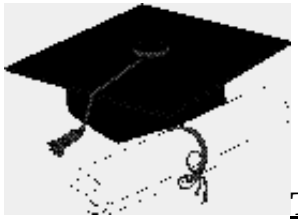
Grettie Bondy

ALUMNI NEWS

Prompted by our mention in the last newsletter of the Department song, V. Glenn McIninch (BS/EP 1939; MS/PHYS 1942) sent us a copy of a photograph taken at the Physics Department picnic in the spring of 1937! Mr. McIninch was able to identify 16 of the 49 people in the picture, including Professors Nielsen (as in Nielsen Hall), Crawford, and Whitmer. But wait! There's more. Thanks to technology of the 90's you can see this picture from wherever you are if you can access the Internet. Just use the URL above and have a look. Anyone who can identify the LOCATION of the spring, 1937, picnic from the photograph will receive a free lifetime subscription to the Phyast Phlyer. Answers must reach the editor by no later than Saturday, November 4, 1995, to qualify. One entry per contestant.

But back to Mr. McIninch himself. He retired in 1983 from Eastman Kodak in Rochester, NY, where he had worked since 1940, first as a summer student and then as regular employee. His primary work included the development of equipment and methods for quality control testing of

photographic film. Since retiring, he has remained a consultant for Kodak.



THE LIN GRADUATE RESEARCH FELLOWSHIP

The endowed fellowship honoring former OU Physics Professor Chun Lin (currently at the University of Wisconsin) continues to grow, thanks to the generosity of many of his former students. Income from the endowment will be used to enhance one of our regular teaching-assistant positions and awarded annually to an outstanding graduate student. The Fellowship was begun over a year ago with a call and a donation from a former Lin student (who wishes to remain anonymous) and has now grown to $17,650 as of mid-September of this year.

This fall the Department will enter the second phase of the development of the Lin Fellowship as we initiate a direct solicitation to all alumni. If you have been looking for a way to help someone succeed in Physics and Astronomy, this might be the appropriate avenue. For more information on the Lin Fellowship, please contact the Department Chair, **Dr. Ryan Doezema**, by mail, phone (405-325-3961), or email (doezema@nhn.ou.edu).

PHYAST WELCOMES

NEW FACULTY, STUDENTS AND POSTDOCS

NEIL SHAFER-RAY

The Department wishes to welcome the arrival of **Neil Shafer-Ray** as our newest experimentalist in Atomic and Molecular Physics. Neil was hired after a highly competitive search conducted amidst the snow storms and fog last Spring, which almost stranded Neil in Tulsa---but that was just our first test, and he passed!

Neil comes to us from the research group of Richard Zare at Stanford University (also the post-doctoral home of our own **Maureen O'Halloran**), where he just recently achieved the most detailed experimental results to date on a chemically reactive system of fundamental interest. He can often be seen dancing the corridors in delight at his comparisons of theory and experiment for the simplest of all chemical reactions, D+H2 --> HD+H, a feat that has been the goal of much of the last thirty years of modern Chemical Physics.

In addition to his post-doctoral fellowship at Stanford, Neil spent one year in Japan after graduating from the group of Richard Bersohn at Columbia University. There he had developed techniques for detailed scattering experiments in atomic and molecular collisions, techniques which he then adapted to such advantage in his Stanford studies. Neil obtained his undergraduate degree in Physics from MIT.

Neil is teaching a General Physics course to Engineers, and has already been an innovator with advanced lectures based on mixing computer

graphics with a very fluid lecture style. He loves the freedom that computer-aided projection allows in maintaining continuous eye contact with the students. He also maintains direct personal contact by running one of his own seminar sections. First indications are that his students are very enthusiastic about the computer-aided lectures, and that Neil will make an effective, dynamic, and innovative teacher at introductory and advanced levels.

Neil has begun constructing his research laboratory for studying atoms and molecules in highly-excited Rydberg states. He expects to observe and study their dynamics on extremely rapid (pico-second) time scales, which he predicts will provide fundamental insights about the evolution of these unusual electronic states. In addition, he predicts that the very slow (and hence easily perturbed) electron of a Rydberg state may provide the basis for extremely sensitive ultra-fast imaging of weak electric and magnetic fields. His first experiments will concentrate on atomic and molecular hydrogen, in order to simplify comparisons with theory. Here the Department will benefit from contributions by our theoreticians **Michael Morrison, Greg Parker**, and **Deborah Watson**. He has also begun discussing some novel ideas for molecular beam scattering with **Mark Keil**.

In order to make their arrival in Norman particularly tranquil, Neil and his wife Kerry anticipate their first baby in the Fall semester. We wish all the Shafer-Rays much success and happiness.

Mark Keil

MIKE STRAUSS

The members of the High Energy group are excited about the addition of **Dr. Michael G. Strauss** to the OU faculty. Dr. Strauss received his Bachelors degree from Biola University in La Mirada, California with a major in Physical Science and a minor in Mathematical Science. He then went on to receive his Ph.D. at UCLA under the supervision of Prof. Charles Buchanan. The topic of his dissertation was the measurement of the Lambda polarization as a probe of the strong interaction field. This work was done at the Stanford Linear Accelerator Center (SLAC).

Dr. Strauss then went on to the University of Massachusetts where as a postdoc, he was a member of the SLD collaboration. This collaboration is centered at SLAC and operates the only High Energy physics detector at a linear collider. As a member of the SLD collaboration he was involved in both hardware and software aspects of the experiment. His involvement in the physics includes several measurements that involve particles containing b-quarks.

On his arrival at OU he decided to join the group's D0 effort at Fermilab; this effort includes **Prof. P. Gutierrez**, Prof. G. Kalbfliesch, **Dr. G. Guglielmo** and graduate students **E. Smith** and **G. Steinbrueck**. He will join the group's effort in the upgrade of the D0 detector and its analysis effort in the area of strong interaction physics.

Phil Gutierrez

NEW GRADUATE STUDENTS

This fall we welcome nine new, eager students as they begin their graduate work. As you can see from the list below, they have come from

numerous distant places. We wish them much luck and hope that they will enjoy their stay in the Department.

Georg Steinbrueck - Fall 95 - Heidelberg (BS) **Kazuhito Hatano** - Summer 95 - N. Arizona U (BS) **David Louk** - Summer 95 - Emporia State U, Kansas (BS) **Pam Jenkins** - Fall 95 - Florida Intl U (MS) **Chris Hladik** - Fall 95 - SW Okla State U (BS) **Giti Khodaparast** - Fall 95 - Temple U, Pennsylvania (MS) **Eric Lentz** - Fall 95 - U of Wisconsin (BS) **Ted Mansell** - Fall 95 - Northern Illinois U (MS) **Adria Morris** - Fall 95 - OU (BS)

NEW POSTDOCS

In addition to new students and faculty members, we are especially pleased to have three new postdocs working in the Department beginning this fall.

Stefan Boettcher (Milton) - PhD Washington U, St. Louis, MO

Rosemary Lasell (Keil) - PhD Old Dominion U, Norfolk, VA

Gamini Dharmasena (Keil) - PhD U of Oklahoma (Chem), Norman

NEW UNDERGRADUATE ASSISTANTS

Michelle Bullard (Computer lab)

Kim Schneider (Computer lab)

Shane Lindstrom (Computer lab)

Derek Miller (Computer lab)

David Silvan (Computer lab)

Jarom Christie (Johnson lab)

Ian Spielman (HEP lab)

A hearty welcome to all!!

THE PAPER CHASE*:

Recent Publications

*He who dies with the most publications wins.

S. V. Kravchenko, G. V. Kravchenko, J. E. Furneaux, V. M. Pudalov, and M. D'Iorio "Possible metal/insulator transition at B=0 in two dimensions", Phys. Rev. B 50, 8039 (1994).

S. V. Kravchenko, **Whitney Mason**, J. E. Furneaux, J. M. Caulfield, J. Singleton, and V. M. Pudalov "Temperature induced transitions between insulator, metal, and quantum Hall states in a two-dimensional electron system", J. Phys.: Cond. Matt. 7, L41 (1995).

S. V. Kravchenko, G. V. Kravchenko, J. E. Furneaux, V. M. Pudalov, and M. D'Iorio "Anomalous resistance drop in Si inversion layers below 1 K", The Physics of Semiconductors, edited by D. J. Lockwood (World Scientific, Singapore, 1995), V. 1, p. 815.

S. V. Kravchenko, W. E. Mason, G. E. Bowker, J. E. Furneaux, V. M. Pudalov, and M. D'Iorio "Scaling of an anomalous metal/insulator transition in a two-dimensional system in silicon at B=0", Phys. Rev. B 51, 7038 (1995).

S. V. Kravchenko, Whitney Mason, J. E. Furneaux, J. M. Caulfield, J. Singleton, and V. M. Pudalov "Temperature induced insulator--metal--QHE transitions", Physica B 211, 410 (1995).

Whitney Mason, S. V. Kravchenko, G. E. Bowker, and J. E. Furneaux, "Experimental evidence of the Coulomb gap in 2D", Bull. Amer. Phys. Soc. 40, 87 (1995).

S. V. Kravchenko, Whitney Mason, G. E. Bowker, J. E. Furneaux, V. M. Pudalov, and M. D'Iorio, "Scaling of an anomalous metal/insulator transition in two dimensions at B=0", Bull. Amer. Phys. Soc. 40, 87 (1995).

J. E. Furneaux, S. V. Kravchenko, Whitney Mason, and V. M. Pudalov "Floating up of the extended states at nu=1 with increasing disorder", Bull. Amer. Phys. Soc. 40, 704 (1995).

J. E. Furneaux, S. V. Kravchenko, W. E. Mason, G. E. Bowker, and V. M. Pudalov "Destruction of the quantum Hall effect with increasing disorder", Phys. Rev. B 51, 17227 (1995).

S. V. Kravchenko, W. Mason, J. E. Furneaux, and V. M. Pudalov "Global phase diagram for the quantum Hall effect: An experimental picture", Phys. Rev. Lett. 75, 910 (1995).

E. Baron, P. H. Hauschildt, and T. R. Young, "Supernova 1993J: One Year Later", Phys. Repts., 256, (1995) 23.

P. H. Hauschildt, S. Starrfield, S. N. Shore, F. Allard, and E. Baron, "The Physics of Early Nova Spectra", Ap. J., (1995), 829.

P. Nugent, D. Branch, E. Baron**, A. Fisher, T. Vaughan**, and P. H. Hauschildt, "Low Hubble Constant from the Physics of Type Ia Supernovae," Phys. Rev. Letters, (1995), 75, 394; Erratum, Phys. Rev. Letters, (1995) 76, 000.

T. R. Young, E. Baron, and D. Branch "Light Curve Studies of SN 1993J and SN 1994I," Ap. J. (Letters), (1995), 449, L51.

K.A. Milton, "Absence of Species Doubling in Finite-Element Quantum Electrodynamics", Lett. Math. Phys. 34, 285, (1995).

K.A. Milton, "Finite-element time evolution operator for the anharmonic oscillator", in Proceedings of Second International Workshop on Harmonic Oscillators, ed. D. Han and K. B. Wolf, NASA Conference Publication 3286, 223, (1995).

S. Boettcher, "Polymer-Chain Adsorption Transition at a Cylindrical Boundary", Physical Review E, 51, 3862 (1995).

S. Boettcher and M. Moshe, "Statistical Mechanics on Spherical Geometries," Physical Review Letters 74, 2410 (1995).

T.E. Vaughan, D. Branch, D.L. Miller, & S. Perlmutter, "The Absolute Magnitude Distributions of Type Ia Supernovae", Astrophysical Journal, 439, 558 (1995).

F.R. Boffi & D. Branch, "Radio emission from Type Ia Supernovae as a Test of Symbiotic Star Progenitor Systems", PASP, 107, 347 (1995).

A. Fisher, D. Branch, P.A. Hoflich, and A. Khokhlov, "The Minimum Velocity of Calcium in Type Ia Supernovae and the Value of the Hubble Constant", ApJ, 447, L73 (1995).

M. Duschinger, J. Puls, D. Branch, P. Hoflich, & A. Gabler, "Formation of Hydrogen Lines in the Atmospheres of Type II Supernovae", Astronomy and Astropyhsics}, 297, 802 (1995).

D. Branch & A.M. Khokhlov, "Type Ia Supernovae: Observations, Modeling, Distances", Physics Reports, 256, 53.

R. Kantowski, T. Vaughan, & D. Branch, "The Effects of Inhomogeneities on Evaluating the Deceleration Parameter q0", ApJ, 447, 35 (1995).

P. Nugent, D. Branch, E. Baron, A. Fisher, T. E. Vaughan, and P.H. Hauschildt, "Low Hubble Constant from Physics of Type Ia Supernovae", Physical Review Letters, 75, 394 (1995).

T. R. Young, E. Baron, and D. Branch, "Light Curve Studies of SN 1993J and SN 1994I", ApJ, 449, L51 (1995).

Hsiao-Ling Zhou, Barbara L. Whitten, **Wayne K. Trail,** Michael A. Morrison, Keith B. MacAdam, Klaus Bartschat, and David W. Norcross,

"Low-Energy Electron Collisions with Sodium: Scattering of Spin-Polarized Electrons", Physical Review A, 52, 1152 (1995)

Weiguo Sun, Michael A. Morrison**, William A. Isaacs,** Wayne K. Trail**,** Dean T. Alle, R. J. Gulley, Michael J. Brennan, and Stephen J. Buckman, "A Detailed Theoretical and Experimental Analysis of Low Energy Electron--N2 Scattering," Physical Review A, 52, 1229 (1995)

Shashkin, Kravchenko, Dolgopolov, S. V. Kravchenko, and Furneaux, "Comment on `Fate of the delocalized states in a vanishing magnetic field'", Phys. Rev. Lett. 75, 2248 (1995).

GRANTS FUNDED

David Branch, Eddie Baron, $65,000, NASA, "Quantitative Ultraviolet Spectroscopy of Supernovae."

Kieran Mullen, NSF CAREER grant for three years, "Physics of 2D electronic and helionic systems".

Eddie Baron and Peter Hauschildt (ASU), $132,775, NSF, "A Study of Supernovae", 1995--1997.

M.B. Santos and C.V. McConville (Warwick Univ., UK), NATO, "MBE growth and surface characterization of InSb and AlInSb," $6,700.

M.B. Santos, "InSb quantum-well magnetic-field sensors," OCAST, $81,800.

David Branch, "Supernova Studies", NSF, $50,000.

P. Gutierrez, G. Kalbfleisch, "Characterization and Test of Silicon Micro-Strip Detectors for the D0 Upgrade Project", Fermilab D0 Collab., $18,500.

The Laboratory for Electronic Properties of Materials (LEPM) has been funded for 3 additional years under NSF's EPSCoR program. This grant will support 14 researchers in 4 departments at OU (Phyast, Chemistry, EE, and CE) as part of a state-wide phase 3 EPSCoR coalition with OSU and TU. The total funding for the "Center for Photonic and Electronic Materials and Devices" will be about $2.7M composed of a 50-50 NSF and State split. The share for LEPM will total about $1.2M over three years. Roger Frech (Chem) and Ryan Doezema are the OU members of a

steering committee composed of two researchers from each institution.

COLLOQUIA, INVITED TALKS

David Branch, "Type Ia Supernovae: Cosmic Distance Indicators", at April workshop on "Future Opportunities for Optical Astronomy from Space" at Marshall Spaceflight Center, Huntsville, AL; a Keynote lecture in February entitled "Supernova and Cosmology" at the Eleventh Annual Applied Mathematics Conference of the University of Central Oklahoma; "Type Ia Supernova and the Value of the Hubble Constant" at the Center for Particle Astrophysics, University of California at Berkeley, and (separately) at the Institute for Nuclear and Particle Astrophysics, Lawrence Berkeley Lab, in March; and three additional lectures on Type Ia Supernovae: "Nuclear Explosion Mechanisms"; "From Fusion to Photons"; and "In Search of the Binary Progenitor Systems" at the INPA of LBL

Sergey Kravchenko recently spoke at the University of Utah, Princeton University, University of Minnesota, and Oklahoma State University.

John Furneaux presented talks at AT&T Bell Labs, Princeton University, City College of the City University of New York, and Delft Technical University.

Deborah Watson was an invited speaker at a NATO conference in Halkidiki, Greece entitled 'New Methods in Quantum Theory' that was held May 14-19. There were 27 speakers and 70 participants representing 26 countries. Her postdoc **Martin Dunn** also attended and presented some of their work in the poster sessions.

Kim Milton has recently presented three talks: "Renormalized Delta Expansion--From Scalar Fields to Gauge Theories" Oxford, 26/5/95; "The Finite-Element Method Applied to Quantum Systems: From QM to QCD" University of Durham, 19/5/95; and "Finite-Element Field Theory" University of Wales at Swansea, 15/6/95.

Stefan Boettcher presented a Theory Seminar at OU in April entitled "Hyperspherical Random Walks".

CONFERENCES, WORKSHOPS, & CONTRIBUTIONS

Phil Gutierrez attended D0 collaboration workshop, U. of Michigan, June 12-16.

Baron, Fisher, Nugent and Branch spent June 20-30 at the NATO Advanced Study Institute on Thermonuclear Supernovae, near Barcelona and very near a beach. All four presented talks.

Mike Morrison's research group attended the Twenty-Sixth Annual meeting of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society: Toronto, Canada (May 1995). Three papers were presented:

W. A. Isaacs and M. A. Morrison, "Alignment Effects in Rydberg Ca--Rare-Gas Scattering",

W. K. Trail, W. A. Isaacs, W. Sun, and M. A. Morrison**,** "Rotational Excitation in Resonant and Near-Threshold Low-Energy e--N2 Scattering",

M. A. Morrison and W. A. Isaacs, "Born Completion in the Calculation of Differential Cross Sections for Elastic Electron-Non-polar Molecule Scattering".

Mike's group also attended the International Conference on the Physics of Electronic and Atomic Collisions, Vancouver Canada (July---August 1995) and together presented five papers:

W. Sun, M. A. Morrison, W. A. Isaacs, D. T. Alee, R. J. Gulley, M. J. Brennan, and S. J. Buckman, "Electron Scattering Cross Sections for N2: A Detailed Comparison of Experiment and Theory for Elastic Scattering and Vibrational Excitation at Energies below 10 eV"

W. K. Trail, W. A. Isaacs, W. Sun, and M. A. Morrison, "Calculation of Rotational Excitation Cross Sections in Low-Energy Electron-Molecule Scattering."

A. G. Robertson, M. T. Elford, R. W. Crompton, M. A. Morrions, W. A. Isaacs, W. Sun, and W. K. Trail**,** "A Study of the Rotational and Vibrational Excitation of N2 Using Electron Drift Velocity Data for an N2--Ne Mixture at 76.8K"

T. L. Goforth**, O. Boydstun**, B. L. Whitten, W. K. Trail, and M. A. Morrison, "Threshold Structures in Low-energy Electron-Sodium Scattering."

W. A. Isaacs and M. A. Morrison, "Alignment Effects in the Scattering of Rare-gas Atoms from Rydberg Calcium Atoms."

Phil Gutierrez attended the European Physical Society Meeting, Brussels, Belgium July 27 -Aug 2.

Talks were presented at the March Meeting of APS (1995) by Sergey Kravchenko, Whitney Mason, and John Furneaux.

Two poster presentations were made at the International Conference of Electronic Properties of Two-dimensional Systems, Nottingham, England (1995) by Whitney Mason and John Furneaux.

TRAVEL

In February David Branch spent two weeks at the Space Telescope Science Institute, Baltimore, primarily to work with Mario Livio on a review article, "In Search of the Progenitors of Type Ia Supernovae" (which eventually will appear as an invited review in PASP). In March he visited Lawrence Berkeley Lab for three weeks, primarily to work with Saul Perlmutter's group on using remote Type Ia supernovae to determine the

value of the cosmic deceleration parameter.

Kim Milton has finished up "a wonderful sabbatical at Imperial College London." Besides accomplishing a great deal of physics, he took in the culture of that great city, with side trips to such places as Salisbury and Stonehenge.

Mike Morrison went as a research consultant to Los Alamos National Laboratory (May) and briefly visited with a colleague at University of British Columbia.

Phil Gutierrez traveled to Fermilab during the summer, and to U. of Calif Riverside to discuss Silicon Detector testing for D0 collaboration July 13-14.

Dick Henry visited his collaborator Karen Kwitter at Williams College for a week in July. His daughter Robin accompanied him and then forced him to go to New York City for a few days to recover from the week of non-stop scientific breakthroughs.

Tibor Herczeg visited the Bamberg Observatory in Germany, where he has several common projects with Horst Drechsel, for 10 days in July-August. They are working on a paper on the X-ray source Her X-1.

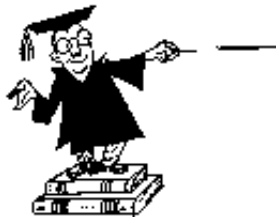
VISITORS

Tim Germann, a collaborator from the Chemistry Department at Harvard visited Deborah Watson in July to brainstorm on future projects and plan the writeup of some completed work.

Peter Hauschildt visited Eddie Baron for a week in July, when they added the treatment of the rest of the iron group in NLTE. They also began a new project to do 3 (spatial) dimensional radiation transport.

Chris McConville, from Warwick Univ. in the UK, visited Mike Santos for a week in May to begin work on their NATO-funded collaboration and to hike in the Wichita Mountains Wildlife Refuge. The OU MBE lab will produce InSb/AlInSb samples that Chris's group will study using HREELS (high resolution electron energy loss spectroscopy), TEM (transmission electron microscopy), and ESCA (electron spectroscopy for chemical analysis).

Mike Morrison's group has enjoyed visits from several people. Tom Gibson, from the Department of Physics at Texas Tech was here for two months in early summer; Tom was doing developmental work on positron-molecule scattering. Second, Terry Goforth from Southwestern was here. Terry was leading a project to explore threshold behavior of low-energy electron-Na cross sections; she was supported on an NSF Research Opportunity Award grant. Finally, Barbara Whitten returned to OU for the remainder of her sabattical; Barbara has been developing new theoretical approaches to the study of charge transfer in heavy-particle collisions involving Rydberg atoms.



TEACHING

Kieran Mullen is teaching Phys 1205 for the first time. He's trying a new introductory lab in which the students play a card game called "Eleusis" that models the scientific method, complete with competition for first publication of discoveries, and loss of reputation if your theory is discredited. The game is very useful to start inductive reasoning, and to have the students start thinking about science as an endeavor they can do.

Andy Feldt taught a portion of an Intersession class this summer. The goal of the class was to help prepare students for the MCAT exam. He dealt with the Physics portion of the class and was amazed to find that he still knew any physics!

David Branch spoke on "Universal Questions" at Albany High School, Albany, California, under the auspices of the Hands On Universe program.

While Kieran Mullen spends time in class playing cards, Dick Henry has kept his honors astronomy class busy reading Doyle's "The Hound of the Baskervilles", in which the students looked for similarities between the scientific method and mystery-solving, as well as talking about the objectivity/ subjectivity of scientific truth. What's next K.M, requiring them to buy Game-Boys? Come on!

Tibor Herczeg taught one section of the introductory level astronomy course "The Universe" in the summer school of New York University. He has been teaching there off and on during the summer since 1978. Tibor laments that this annual opportunity may be halted due to a shift in course format which favors more general and interdisciplinary science courses comprising concepts from several different areas of the natural sciences; the end result is a move away from detail in any specific area such as astronomy.

INSTRUMENT SHOP NEWS

Its been an active year for the Instrument Shop. We would like to take this opportunity to thank the various faculty for their contributions that led to the acquisition of a state of the art machining center. Completely computer controlled, the machine allows us to create virtually any three dimensional shape. Because the machine is able to control the speed and the position of the tool so precisely, we're able to work with almost any material, plastics, metals, ceramics etc. We've also obtained a few other machine tools through the State Agency that have significantly improved our capability to produce high quality products. And over the summer we added a new cleaning and finishing facility that really helps us keep our dirt organized. This is quite an asset!

Last spring we assisted the engineers in completing their solar car in order to compete in SUNRAYCE 95 . Sponsored by GM, and the DOE the competing schools come from all over North America. The race started in Indianapolis, Indiana, and ended nine days later in Golden, Colorado. I

participated as a member of the O.U. team as a technical advisor and machinist. Though the event is highly competitive, the teamwork and camaraderie that exist within and between individual teams is truly spectacular. To find out more about the event, contact the SUNRAYCE home page on the internet.. Be sure to spell SUNRAYCE correctly.

We anticipate, and look forward to helping the new faculty establish their labs and research in the coming year.

If you would like to visit our facility, please feel free to drop by room 114, and **Bob**, **Barry**, or myself will show you around.

Joel Young

SCRATCHPAD

Since last year at this time when the chrysanthemums were blooming on the South Oval, big changes have swept across the campus and around the Department. We have a new President, a new football coach, a new basketball coach, and FOUR new faculty members (all of them physicists, we point out) in the Department. The President was inaugurated a few weeks ago, the football team is winning (written prior to the game with Colorado), the basketball team was a miracle squad last winter, and those new faculty members are making the rest of us move faster (not to mention feel more crowded). Change. But those chrysanthemums. Ah, yes. Their beds have now been framed in cement, presumably on orders from the new President to ensure their status year after year as the most colorful accompanyment to fall we have around here. Permanency amid constant change. There must be a second law violation there somewhere, but I'm not looking for it.

Happy autumn!

Dick Henry