

What's New in Olin

Fullers On Their Way To China: As most of you will recall, Dick Fuller retired last spring after 30 years of teaching physics at Gustavus. In fact, we consider Dick to be the “father” of the current Physics Department. When he came to Gustavus in 1968, he brought with him an active research program in condensed matter physics and an unmatched enthusiasm for teaching physics. His hiring was the spark that ignited the explosive growth in physics at Gustavus, leading to the hiring of the current faculty, the expansion of the department, and an emphasis on student/faculty research. Dick was Chair of the department for a number of years and acting Dean of the College for one year. He was the first recipient of the Edgar M. Carlson Award for Distinguished Teaching. In addition to being professor of physics, Dick was also Director of Curriculum II, General Education, and Interdisciplinary Studies, and the Dorothy Peterson, Mildred Peterson Hanson, and Arthur Jennings Hanson Professor of Liberal Studies.



It will take at least three people to replace him.

After several retirement parties, Dick and Judy left for Ocean University of Qingdao in the People's Republic of China in early August. Judy will begin teaching there this fall and Dick hopes to pick up some work in the physics and engineering areas to keep from getting bored. They expect to be in China at least two years and eventually hope to really retire in Seattle. Dick and Judy should be reachable at their Gustavus email accounts, and we just heard from them in late August confirming the connection.

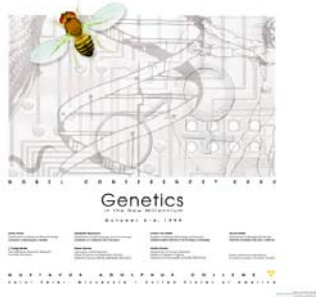
Stuart Hutton joins the physics faculty as Visiting Assistant Professor. Stuart comes to us from Montana Tech where he was also Visiting Assistant Professor. He received his B.S. from the University of Richmond (VA) and his M.S. and Ph.D. from Montana State University. He will be teaching General Physics, one lab section for it, and half of Experimental Modern Physics this fall.

Olin Observatory Hours: Sundays, Tuesdays, & Thursdays 8-10 pm

Editors Note: This Newsletter is issued at the beginning of the fall semester for the benefit of current and prospective students, alumni, faculty and others interested in the physics program. Students enrolled in the major course sequence will also be receiving copies of the current physics curriculum and advising guide, the fall activity calendar, and a user's guide to the physics software on the computer network. Juniors and seniors will be offered copies of the department's guide to graduate school planning, and the AAPT brochure "Planning for Graduate Studies in Physics and Related Fields", written by Prof. Henry.

Summer Activities

Physics faculty have been involved in research, writing, workshops, travel, and a variety of family activities this summer.



**October 5 & 6
Lund Arena**

Faculty Activities:

Dennis Henry reports a summer dominated by the "four R's": repairs, 'riting, railroads, and recreation. In June he wrote a paper for *The American Journal of Physics* describing applications of clamp-on ammeters in E&M lab experiments. He and Mary then made their annual pilgrimage to Alexandria for a week on Lake Le Homme Dieu, while contractors continued with post-tornado repairs on and off (mostly off) throughout the summer. In July he attended the national conventions of the NP Railway Historical Association, and the NMRA National Train Show, both for historical sessions and promoting his line of model railroad kits, now in their 22nd year. August saw the usual home computer upgrades and crashes (in that order), which compressed the time available for revising the Classical III lab manual, and experimenting with various graphics packages for physics and model design purposes.

It was a busy summer for **Chuck Niederriter**, even though he may not have accomplished as much as he hoped he would. He registered first-year students in June and with Steve Mellema taught an Astronomy Summer Camp in July. Of course, there was time for travelling, including the requisite trip to Pennsylvania to visit family and several camping trips. A number of projects were started

between the many trips to the pool and lake with the family. Chuck began design work on an addition for his house and is currently awaiting the final bids from contractors. He put the finishing touches on the 13-inch Dobsonian telescope that Andrew Ohrt ('02) and Brett Manning ('02) spent so much time on, and even had a chance to use it.

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Writing projects include one grant proposal (acoustical scattering) and a paper for *The American Journal of Physics* and/or *The Physics Teacher* on measuring electric fields with Hall effect force probes. Chuck and Steve

Mellema installed and continue to debug WebAssign, a replacement for WWWAssign and Webtester, with the hopes of being able to use it for fall classes.

Under the auspices of a Presidential Faculty/Student Collaboration grant, **Steve Mellema** spent this summer working with Chris Holstrom ('00) on a new research project in optical imaging using a low-coherence laser and an optical heterodyning technique. The work begun this summer will continue into the coming school year. Steve also attended the summer meeting of the American Association of Physics Teachers in San Antonio, Texas, and presented a paper entitled "MODELFIT: Fostering Student Understanding of Computerized Data



Physics Department Chair Changes:

On August 1, Dennis Henry took over the role of Chair of the Physics Department from Chuck Niederriter who is on leave this fall and January. Professor Henry will be acting chair until January, while Steve Mellema teaches Mechanics for the first time, along with Natural World and Senior Seminar. Professor Mellema will begin a three year stint as Department Chair on January 1, 2000 (ooh spooky). If you have any questions or concerns, please feel free to contact either of them.

Analysis". He looks forward to teaching the Curriculum II Natural World course this fall as well as Mechanics and the physics Senior Seminar.

Tom Huber was busy this summer with several projects. He was working with Larry Engelhardt ('00) writing a Monte Carlo computer simulation for optical/acoustical scattering experiments. When complete, this program will be used to simulate many of the experiments that are being performed as part of the MRI scattering collaboration (Huber, Mellema, Niederriter and Saulnier). This type of simulation can be valuable for several reasons - it allows one to "tinker with" the physics to either include or exclude aspects of the experiment, and make idealized sources, scatterers and detectors. By comparing the simulation to the experimental results, one can better understand the results and plan future experiments. His other big project was preparing for the Experimental Modern Physics course - almost all of the labs have been revised, new equipment has been purchased, and the data acquisition system has been brought forward a decade from using GWBASIC under DOS (late 1980's vintage programming) to Visual Basic under Windows 95. With luck, everything should be working by the time you read this newsletter!

Paul Saulnier spent his summer mainly getting his new house finished. If he seems even more spacey than usual (hard to imagine), it is probably due to inhaling paint fumes. Other projects included (with help) hard wood floors, ceramic tile,

etc. It is always good to have a skill to fall back on. He and his family even had a chance to get away for a weekend at the kid's Las Vegas, Wiscosin Dells.

As a member the Diocesan Council of the Episcopal Diocese of Minnesota, **Jennings Ellis** attended the June meeting in Duluth and stayed an extra night, rode the North Shore Scenic RR out to Two Harbors, and then traveled up to the Range to visit Ely, Soudan, and Hibbing. After spending the 4th of July here, he headed down to Iowa to visit his farm and was there for the start of the sweet corn season. In late July he attended the 15th National Garden Railway Convention in suburban Chicago and visited about 15 backyards to see different kinds of layouts, attended numerous clinics, and viewed the commercial exhibits. Intermittently, he tried to work on both chemistry and physics lab stuff.....and is still plodding along. He has many pictures of his trips taken with his new Toshiba megapixel digital camera so stop by his new digs in Physics (OH 204) to see them.

Stuart Hutton taught two courses in physics at Montana Tech this summer before moving to St. Peter. Probably the most significant thing he did was to petition the faculty at Montana Tech to provide full funding to one of his students who was trying to complete her degree before she died of cancer. He also continued with his work in conductivity measurements with preliminary measurements on contaminated soil from the Berkeley Pit in Butte.

Summer Activities

This has been another active summer for student internships, technical employment, and research on and off campus. This is our most complete list at the time of publication: (Students not listed, please fill in your advisor or Prof. Niederriter.)

Student Activities:

Ann Augustine ('00)	University of Nebraska	Biochemistry Research
Tim Andeen ('01)	REU Fermilab	
David Anderson ('01)	REU University of Minnesota	High Energy Physics
Matt Cunningham ('01)	REU University of Minnesota	Materials Science
Larry Englehart ('00)	Gustavus	Modeling of Scattering with Tom Huber
Lauren Fry ('00)	Minn Minnesota Pollution Control Agency	Ground Water Mapping
Jason Haaheim ('01)	ESI Microvision	Technical Writing in Robotics Industry
Chris Holstrom ('00)	Gustavus	Light Scattering Research with Steve Mellema
Arno Merkle ('01)	Max Planck Institute in Stuttgart	Modeling Atomic Structures
Laura Owen ('02)	REU University of Minnesota	Biophysics and Biochemistry with Ellis Ball

Alumni



Check out the Physics Alumni web pages (physics.gac.edu) for more information on physics alums.

Alumni News:

- Degrees:** Shannon Siefken ('97) - M.S. Physics, Colorado State University - May 1999
Bob Klindworth ('93) - Ph.D. Physics, New Mexico State University - June 1999
Glennys Mensing ('89) - Ph.D. Physics, Vanderbilt University
- New** Bradley Delahunty ('91) - Microsoft - Seattle, Washington
- Positions:** Tracy Melin ('87) - Micron Technology - Boise Idaho
- Weddings:** Marissa Lingen ('99) to Mark Gritter ('98) - August, 1999
Andy Miller ('96) to Beverly Veroeven - August, 1999
Wendy Garbers ('95) - Rumor has it in June 1999
Matt Pettis ('94) to Christy Dorman - July, 1999

The Class of 1999:

The physics department is proud of its graduates and tries to keep track of where they go and what they are up to. If you have information about physics alumni, please pass it along to the department chair or another faculty member.

Bob Bryngleson	Electrical Engineering	University of Minnesota
Bob deVyra	Dual-Degree Engineering	University of Minnesota
Carrie Ginder	Dual-Degree Mechanical Engineering	University of Minnesota
Chiew Seng Koay	Physics	UW Madison or Colorado State
Marissa Lingen	Physics	University of California at Davis
Ross Schermer	Electrical Engineering	University of Minnesota
Pat TeKavec	Physics	University of Oregon

Offices, etc....

The physics department makes office space available to students working in the department as assistants or in research. Students who are working with us as paid assistants or in active faculty-student research will have first priority. Students wishing office space should see Professor Henry, who will make assignments, distribute keys and

Student Assistants:

At the close of the spring semester the department collected schedules and work preferences from all students who expressed an interest in working for the department in some capacity. On the Friday before classes begin, we will be assigning students as lab assistants, group assistants, tutors, and graders in selected courses. We also have some other jobs that benefit the program and students. These include machine shop work, electronics maintenance, WWW assistance, software testing, and other technical tasks. If you are a returning physics major with special skills who does not qualify for work-study, but who would still like to earn some money as a physics assistant and perhaps receive office space, we may be able to hire you under the special approval category. We can usually get approval for a total of about 25 hours of work a week shared among 8-12 students to help in critical areas. Please see Professor Henry to register your interest in any type of departmental work.



Faculty Information

All full-time faculty in the department share advising responsibilities for physics majors.

In addition to their teaching and research responsibilities, physics faculty carry out additional assignments within the department and on campus.

THE YEAR AHEAD FOR THE FACULTY:

In addition to being acting Chair in the fall, **Dennis Henry** continues as the coordinator of our program of outside speakers and as pre-engineering advisor, shop supervisor, and dual-degree program officer.

Steve Mellema will continue as Physics Network Manager for the fall semester and become Chair in January. Please contact him if problems are encountered. He also continues as Assistant Radiation Safety Officer for Gustavus and will serve on the Faculty Compensation Committee and the College Budget Committee.

After his fall and J-Term leave, **Chuck Niederriter** will assume the role of Physics Network Manager and continue to manage the Olin Observatory and its evening observing sessions for the GAC

community and other organizations (Scouts, etc). He also continues to be involved in planning for the 2001 Nobel Conference and Rydell Lecture Program.

Tom Huber continues as coordinator of off-campus research and internship information, and as the department's liaison with the Library. He also supervises the department's World Wide Web presence and is the liaison with Information Technology concerning Windows NT and Unix workstations. In addition, he is the Chair of the Information Technology Advisory Committee.

Paul Saulnier continues as SPS advisor, President of Gustavus' chapter of Sigma Xi and Co-Director of faculty *ShopTalks*. He also serves on the College's Faculty

Course Information

CHECK IN WITH YOUR PHYSICS FACULTY ADVISOR.

Returning students should make an early appointment with their faculty advisor to catch up on news and review their fall course schedule.

Spring Courses Announcements:

PHY 340, Condensed Matter Physics, is scheduled to be the advanced topics course in the spring. We may be able to offer **PHY344, Advanced Topics**, and/or **PHY104, Physics of Sound and Music** courses as well. Watch for announcements.

January Term Courses:

Electronics and Instrumentation II with Paul Saunlier
Fortran for the Physical Sciences with Stuart Hutton and Steve Mellema
Chaos, Complexity, and Computers with Rydell/Nobel Lecturer Susan Coppersmith

Course Numbers: What is PH45? As faculty and students alike struggle with remembering the new three digit course identifiers, take advantage of the cross references posted outside the offices and off the physics web page.

Alumni Information **Where Are They Now?**

Careers in Physics: *Physics teachers are often asked “what can I do with a degree in physics?” Of course, the best answer is, anything that you can imagine. It may very well be true that physics at the undergraduate level is the best preparation for a broad range of careers, from medicine to environmental engineering and materials science. Listed below are a few examples of where a few of Gustavus’ physics graduates have taken their degrees.*

Glennys Mensing ('89)
Post-Doc in Shock Physics
University of Illinois

Computer Engineer
Oracle Inc.
Dublin, Ireland

Tracy Melin ('87)
R&D Engineer
Micron Technology
Boise Idaho

Gracie Vargas('94)
Ph.D. Candidate in Biomedical Engineering
University of Texas

Charlie Witzke ('91) and Erik Therien ('92)
Architects
BWBR
Saint Paul, MN

Sarah Danielson ('93)
Biomedical Engineer
Chicago, IL

Nate Blair ('92)
Energy Consultant
Thermal Energy System Specialists
Madison, Wisconsin
Phil Miesle ('95)

Erik Rasmussen ('96)
Software Engineer
Parametric Technology Corporation
Minneapolis

Computer Changes: The physics department was fortunate to be granted new (to us) computers for some of our labs this summer. We received 8 Omni Tech P-6 266 computers for Olin 224 and 8 P5-166 Dell computers for the first floor labs from the the Information Technology Advisory Committee as part of a larger computer swap made possible by college funds. Swapping within the department allowed us to move three of the later machines into the library (215) as well as provide an Omni Tech for Jennings Ellis in his Olin Office. We continue to maintain the Novell network on the fileserver in 223 which still contains most of the programs. All hardware and software has been tested, and upgraded if necessary, but we ask your patience as we really test the system out this fall. Please let Professor Mellema or Henry know of any problems that you encounter with any of the computers so that fixes can be implemented as soon as possible.

Rydell Seminars:

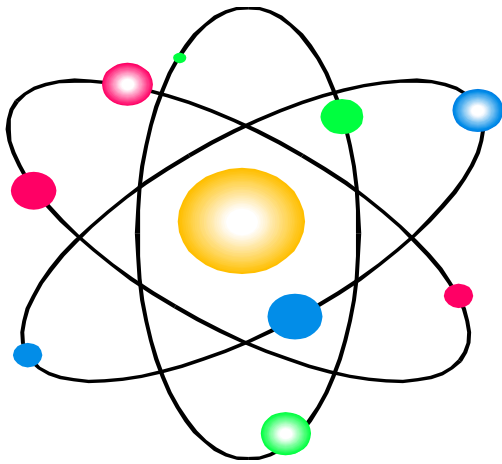
Chaos, Complexity, and Computers: Susan Coppersmith, James Franck Institute at the University of Chicago - January, 2000 - Watch for announcements of evening lectures, as well.

Gustavus Physics

Einstein Was Right!

From:

Physics Department
Gustavus Adolphus College
800 West College



To:

All Physics Students

Society of Physics Students:

SPS PHYSICS CLUB AND FALL PICNIC:

Watch for announcements of SPS Club meetings for student talks, guest lecturers, and faculty talks about research opportunities on campus. The preliminary fall calendar has some events scheduled already. Coming soon will be the first SPS meeting with the traditional introduction of officers and faculty. Plan to attend if you would like to find out about research opportunities



with physics faculty. The annual fall picnic is scheduled on the traditional last Sunday in September. Mark your calendar and get in shape for some serious football. Keep in touch with this year's SPS Officers: Ann Augustine, President; Matt Barrett, Vice-president; Chris Holstrom, Treasurer, Jon Jennings, Secretary/Sophomore Representative; Arno Merkle, Music Representative

SPS Events:

Watch for announcements of weekly athletic and/or social events - most likely Friday evenings. Also plan to attend SPS meetings in the fall to hear reports about summer internships from your fellow students.