

The Dialog

May 2005

SOS/AAPT Minutes from Spring

SOS/AAPT Officers

- President: Bill Kuhlman, St. Xavier H.S.
- President-elect: Elizabeth George, Wittenberg Univeristy
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- V.P. for 2 year Colleges: Darwin Church, UC Clermont
- V.P. for Secondary Schools: Julie Haverkos, Sycamore H.S.
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- Treasurer: Pat Shields, Capital University
- Section Rep to AAPT: Steve Yerian, Xavier University
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- Dialog Editor: Cindy Parrott, Sycamore H.S.
- Past President: Mark Fischer, College of Mt. St. Joseph

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President Bill Kuhlman called the meeting to order at 12:30 p.m.

Executive members in attendance were: Mark Fischer, B. Kuhlman, D. Church, E. George, G. Aubrecht, J. Sullivan, F. Reuter.

Elizabeth George became president at the conclusion of the meeting.

The President-elect position remains unfilled at this time. Elizabeth George, Gordon Aubrecht, and Bill Kuhlman are working on finding a candidate for this office.

Mark Fischer announced that Brian Green on May 19 will lecture on String Theory.

Our October 29, 2005 meeting will be at Mt. St. Joseph College:

Philip Argus, a theoretical particle physicist can lecture on many areas such as String theory, astrophysics, large-scale structure of the universe, relativity.

It was suggested that Cathy Harper also be called to speak at MSJ meeting.

Spring 2006 meeting - proposed at Edison State, Piquay OH, Gordon will contact Mr.

Raymond for details.

Fall 2006 Meeting will be joint with Appalachia section.

May 7, 2005 is the State Science Fair at Ohio State (Columbus). Physics special awards needs at least twenty judges. Starts at 8:00 a.m.

Candidates elected:

Elizabeth George: President until spring 2006

Bill Kuhlman: Past President until spring 2006

President Elect:

Mark Fischer: V.P. for 4 year Colleges until 2007

Fred Reuter: Recording Secretary until spring 2006

Pat Shields: Treasurer until spring 2006

Steven Yerian: Section Rep to National AAPT until spring 2007

V.P. for 2 year Colleges

V.P. for High Schools

Gordon Aubrecht At Large Indeterminate term

Jim Sullivan At Large Indeterminate term

Cindy Parrott Dialog editor & Publisher Indeterminate term

Meeting adjourned at 1:10 p.m.

ASTRONOMY COURSES

of interest to college faculty offered by the UNIVERSITY OF DAYTON CHAUTAUQUA FIELD CENTER

For information contact:

Dr. George K. Miner, Director

Chautauqua Field Center

University of Dayton

Dayton, OH 45469-2314 (9 digits required)

Phone: 937/229-2327 Fax: 937/22-9-2185

Email: miner@udayton.edu

GENERAL REMARKS

These three astronomy courses are connected. The first two, numbers 29 and 31, are given on successive days at the National Radio Astronomy Observatory in Green Bank, WV. A participant can conveniently take both. Course 29 is offered by a research astronomer who also teaches the introductory course. He gives advice on techniques for teaching that course. Course 31 is an introduction to radio astronomy given by personnel from the Green Bank Observatory, where a new large telescope has recently come on-line. Go to www.gb.nrao.edu and click on GBT. Inexpensive lodging and meals on-site are available to early applicants. The total cost for three nights of lodging and eight meals for each course will be \$155.

Courses 31 and 32 provide an attractive package on radio astronomy. Course 31 at Green Bank, WV gives an introduction to the topic. In Course 32 at Socorro, NM, more advanced topics of interferometry are treated. In both courses tours are given of telescopes and other hardware. On-site lodging will also be available in Socorro at a total cost of \$60 for lodging only.

Chautauqua Course 29

Teaching Introductory Astronomy

GARETH WYNN-WILLIAMS, Institute for Astronomy, University of Hawaii

May 26-28, 2005 in Green Bank, WV Apply: DAY

*Note: This course is offered at the National Radio Astronomy Observatory in Green Bank, West Virginia. Applications should be sent to the DAY Field Center. Limited on-site lodging will be available to early applicants. **Also see following course description.***

College faculty are frequently called upon to teach undergraduate astronomy courses even when their own field of specialization is in another science. This course is designed to assist in organizing such a course, and starts from the premise that astronomy is an ideal tool for communicating a broad range of scientific ideas to liberal-arts students.

In this workshop we will examine various approaches to teaching elementary astronomy lecture classes. Among the topics to be covered are: -- Overview of the Universe and its contents, -- Designing a syllabus-- Including or avoiding mathematics-- Linking astronomy with other sciences-- Making astronomy relevant to students-- Using astronomy to teach the scientific method-- Visual aids and other teaching tools-- Choosing a text-- Using internet resources and simulation software

Participants will tour the Green Bank facility, including the recently completed Green Bank Telescope. It is the world's largest fully steerable single dish radio telescope. Also, a 40-ft. diameter radio telescope will be provided for the use of those taking the course.

For college teachers of: all disciplines. **Prerequisites:** none.

***Dr. Wynn-Williams** is a Professor of Astronomy and Chair of the Astronomy Graduate Program at the University of Hawaii. In his research he uses infrared and radio telescopes to study the formation of new stars in interstellar gas clouds and in the nuclei of distant galaxies.*

**SOUTHERN OHIO SECTION OF THE AMERICAN
ASSOCIATION OF PHYSICS TEACHERS**

The Dialog
c/o Cindy Parrott
Sycamore High School
7400 Cornell Road
Cincinnati, OH 45242
Phone: 513-489-0405 ext. 445
Fax: 513-489-7425
Email: parrottc@sycamoreschools.org

Please email your address as the Dialog is moving to an all electric format. The Dialog will be sent via email and can also be found at:

www.physics.ohio-state.edu/~aubrecht/sosaapt.html

When did you last pay your membership dues?

If you can't answer this question and are not a lifetime member, it is time to pay your \$10.00 dues to the SOS/AAPT.

Checks for membership can be made out to the SOS/AAPT and sent to the address at the left. Please ask teaching colleagues and valued friends to consider becoming a part of our organization. New members are always welcome and needed.

The executive board of SOS/AAPT are looking for volunteers to serve as at large members of the board. If interested please contact any of the officers list on page one.

Future Meetings of the SOUTHERN OHIO SECTION of the AMERICAN ASSOCIATION of PHYSICS TEACHERS

October 29, 2005 -- College of Mt. St. Joseph, 5701 Delhi Rd., Cincinnati, Ohio

Local host:: Mark Fischer, mark_fischer@mail.msj.edu

A message from George Miner about the summer offerings:

As you may know, the University of Dayton Chautauqua Field Center offers some two dozen three-day short courses for college and university faculty each year. For most of the courses due to National Science Foundation support the only cost is the \$50 application fee. Due to the late issue of the national brochure from the University of Pittsburgh we find more than the usual space available in some the approaching courses. We would welcome your participation in any courses of interest.

There are three astronomy courses, two at Green Bank, WV (home of the new Green Bank Telescope - the world's largest single dish movable scope) and a third at Socorro, NM (home of the VLA and the control room of the VLBA). (The VLA is a 27 dish array in New Mexico, and the VLBA is a 10 dish array spread across the country.)

At the end of September there is a course in New Mexico on early atomic history. It includes visits to Los Alamos, the Trinity Site (first atomic explosion) and two rather good atomic museums. The Course Director is Dr. Frank Szasz, the author of "The Day the Sun Rose Twice."

There are several computer courses (Java begins May 19 in Dayton) as well as courses on glaciers, earthquakes and volcanoes.

A Radio View of the Universe and the New Green Bank Telescope

Philip Jewell and Staff, National Radio Astronomy Observatory

May 23-25, 2005 in Green Bank, WV Apply: Day

Note: This course is cosponsored by and offered at the National Radio Astronomy Observatory in Green Bank, WV. Applications should be sent to the DAY Field Center. Limited on-site lodging will be available to early applicants. **See note on following course relative to both courses.**

For millennia our understanding of the universe was based only on the information carried to us by visible light. Today human vision is enriched by the knowledge provided by the full complement of electromagnetic radiation. Radio astronomers provided the initial breakthrough and their study of cosmic radio waves has revealed unsuspected components of the universe.

-- **Quasars.** Powerhouses at immense distances whose energy content equals that of thousands of galaxies but whose dimensions are on the scale of the solar system.

-- **Pulsars.** Spinning, magnetized, dead cores of exploded stars whose radio signature is repetitive, periodic pulses.

-- **Interstellar Molecules.** More than 100 molecules, some complex and organic, have been identified by the narrowband signals they radiate.

-- **Cosmic Background Radiation.** The echo of the primordial fireball. Remnant radiation left over from the big bang origin of the universe.

These constituents will all be discussed. In addition, since the course will be held at the telescope site, the instruments used to study them will be described and inspected, including the recently completed Green Bank Telescope. It is the world's largest fully steerable single dish radio telescope. Also, a 40-ft. diameter radio telescope will be provided for the use of those taking the course. Projects will be available.

For college teachers of: all disciplines. **Prerequisites:** none.

Dr. Jewell is the Assistant Director of the National Radio Astronomy Observatory in charge of its Green Bank operations. His research interests include interstellar chemistry, and biomolecules, evolved stars, and radio astronomy instrumentation and techniques. The staff includes other scientists, electronic engineers and programmers.

The Birthplace and Early History of the Atomic Bomb

FERENC M. SZASZ, Department of History, University of New Mexico, and other speakers

Sep. 29 – Oct. 1, 2005 in and near Albuquerque, NM

Apply: DAY

Note: This course is based in Albuquerque, NM. Applications should be sent to the DAY Field Center. This course has a participant fee of \$175 (in addition to the application fee), which covers field trips, admission to certain sites, and other course-related expenses. Optional reduced rate lodging will be available to early applicants.

This course will explore the science, politics and geography behind the creation of the world's first atomic weapons via lectures and field trips. Although the top-secret Manhattan Project created installations all across the country, the community with the highest profile remained Los Alamos, NM. On those remote mesas, director J. Robert Oppenheimer led an international team of scientists and engineers to create the weapons that ended the Second World War. Although the Uranium weapon (Hiroshima) was never field tested before field combat use, scientists insisted on testing what became the Plutonium bomb (Nagasaki), and that test occurred at Trinity Site, NM on July 16, 1945. After the war Sandia National Laboratory became and still is an integral part of the nation's defense system.

This three-day course will examine the origin and early saga of atomic weapons. It will consist of formal lectures on the first day, a trip to Los Alamos on the second day, and a visit to Trinity Site on the final day. Participants will explore the National Atomic Museum in Albuquerque and the Bradbury Science Museum in Los Alamos, as well as other atomic-related venues.

For college teachers of: all disciplines. **Prerequisites:** none.

*Dr. Szasz is Regents' Professor of History at the University of New Mexico and author of **British Scientists and the Manhattan Project** and **The Day the Sun Rose Twice: The Story of the Trinity Site Nuclear Explosion, July 16, 1945**. The other speakers are all specialists in early atomic history.*

Chautauqua Course 32

Interferometry in Radio Astronomy, the VLA and the VLBA

DAVID G. FINLEY and STAFF,

National Radio Astronomy Observatory

July 13-15, 2005 in and near Socorro, NM Apply: DAY

*Note: This course is cosponsored by and offered at the National Radio Astronomy Observatory in Socorro, New Mexico. Applications should be sent to the DAY Field Center. This course, along with the previous course, **Radio View of the Universe and the New Green Bank Telescope**, form a two-session pair. Applications from individuals applying for both and received by mid March will receive priority consideration. Single course applications are also welcome. Limited on-site lodging will be available to early applicants.*

Multiple radio telescopes used in concert can form a synthetic antenna providing the resolving power of a much larger dish. These techniques of interferometry are the focus of this course. Twenty-seven identical reflector antennas operating together on the Plains of San Agustin in New Mexico form the Very Large Array (VLA). They are interconnected, and each can be moved to different observing stations over an area of about 20 by 20 miles. The 25 meter (82-foot) antennas are precise, yet strong enough to stand the snow and wind at the 7000-foot elevation of the site. They are moved every few months to different locations in the Y-shaped layout. They are controlled by a central observing station to which they return data. The VLA is an extremely versatile research instrument and a valuable tool for investigations ranging from planetary and other solar-system observations, to studies of stellar life cycles, galactic structure and evolution, and cosmological studies of the far-distant universe. Dedicated in 1980, the VLA now is undergoing a major expansion, aimed at replacing older technologies with equipment that is current state of the art. This project, resulting in an Expanded VLA (EVLA), will increase the scientific capabilities of the instrument tenfold.

The Very Long Baseline Array (VLBA) is composed of ten identical 25-meter reflector antennas located at independent sites geographically distributed across the United States, from Hawaii to the Virgin Islands. Each antenna independently records data, which is then synthesized into output with the resolution of an 8000-kilometer (5000 miles) single radio telescope. The VLBA's extremely high resolution makes it a premier tool for researchers studying the details of stars and other objects within the Milky Way, as well as distant galaxies, quasars and gravitational-lens systems. In addition, the VLBA provides important data on Earth's plate-tectonic movements.

The course will be held at the NRAO Array Operations Center in Socorro. It will feature lectures by research astronomers on areas of research in which the VLA and the VLBA play world-leading roles. Techniques for radio astronomy interferometry will be described. Participants will tour control rooms and central computer processing facilities at the Operations Center. On the second day of the course, participants will take an in-depth tour of the VLA. Current and future observing programs with the VLA, EVLA, and VLBA will be discussed, along with the scientific contributions expected from the Atacama Large Millimeter Array (ALMA), an international millimeter-wavelength interferometer under construction in Chile's high Atacama Desert.

For college teachers of: all disciplines. **Prerequisites:** the Chautauqua course, Radio View of the Universe and the New Green Bank Telescope, or equivalent elementary knowledge of radio astronomy.

David G. Finley is Public Information Officer for the National Radio Astronomy Observatory in Socorro. A former science editor and writer for The Miami Herald, he taught astronomy and geology at Florida International University in Miami. Author of one book and co-editor of another, his articles on astronomy and other topics have appeared in numerous publications, including Astronomy and Air & Space. He has lectured extensively at observatories, museums, universities, national parks, aboard cruise ships and to clubs and organizations. The staff includes other scientists, electronics engineers and programmers.

2005 Chautauqua Courses Offered by the University of Dayton

For information or application, contact Dr. George K Miner at 937/229-2327 or miner@udayton.edu

May

- May 16-18 **96 An Introduction to LabVIEW and ELVIS** Dayton OH Rex L. Berney and Peter E. Powers, U of Dayton
- May 19-21 **103 An Introduction to the Java Programming Language** Dayton OH Joseph E. Lang, University of Dayton
- May 19-21 **105 Hands-on Networking** Dayton OH Wayne C. Summers, Columbus State University and Rex L. Berney, UD
- May 23-25 **106 Introduction to Computer and Network Security** Dayton OH Wayne C. Summers, Columbus State
- May 23-25 **31 A Radio View of the Universe and the New Green Bank Telescope** Green Bank WV Phillip Jewell,
National Radio Astronomy Observatory
- May 26-28 **29 Teaching Introductory Astronomy** Green Bank WV Gareth Wynn-Williams, University of Hawaii at Manoa

June

- June 2-4 **101 Introduction to Visual Basic.NET Programming** Dayton OH Judith L. Gersting, University of Hawaii at
Hilo
- June 2-4 **102 Using Access, SQL Server, SQL, and XML in Your Database Course** Dayton OH John M. Gersting, Uni-
versity of Hawaii at Hilo
- June 5-9 **68 Geology and Ecology of the Colorado Western Slope** Grand Junction CO Donald Sullivan, Univer-
sity of Denver, and P. Kelly Williams, University of Dayton
- June 6-8 **104 Advanced Java Programming Language** Dayton OH Joseph E. Lang, University of Dayton
- June 6-8 **6 Inquiry Based Instruction: Enhance the Way You Teach and the Way Your Students Learn** Dayton OH
Thomas Lord, Indiana University of Pennsylvania, and others
- June 15-17 **40 Earthquakes and Tsunamis: Alaska 9.2** Anchorage AK Kristine J. Crossen, University of Alaska Anchorage
- June 19-21 **45 Glaciers in Alaska** Anchorage AK Kristine J. Crossen, University of Alaska Anchorage
- June 22-24 **80 Ecology of South-Central Alaska** Anchorage AK Bjartmar Sveinbjornsson and Donald Spalinger,
University of Alaska Anchorage

July

- July 13-15 **32 Interferometry in Radio Astronomy, the VLA and the VLBA** Socorro NM David G. Finley, National Radio
Astronomy Observatory
- July 20-23 **77 Hawaiian Marine Communities** Hawaii P. Kelly Williams, University of Dayton, and Kimberly Smith,
Centers for Disease Control
- July 25-29 **39 Hawaiian Volcanoes from Mauna Kea to Loihi** Hawaii Alexander Malahoff, University of Hawaii at Manoa

Sept.

- Sep 29-Oct 1 **90 The Birthplace and Early History of the Atomic Bomb** Albuquerque NM Ferenc M. Szasz, Department of
History, University of New Mexico and other speakers

State Science Day by Gordon Aubrecht

Dear colleagues in the Ohio Section, APS and the Southern Ohio Section, AAPT, and (most of all) State Science Day judges,

I would like to express my (and our) great appreciation to this year's judges for our physics award at State Science Day. They deserve accolades for their willingness to volunteer of their precious time to do this service.

Gordon Aubrecht, Ohio State

Dan Banks, NSB Group

Tom Barrett, Ohio State

Ralf Bundschuh, Ohio State

Luke Corwin, Ohio State

Mark Fischer, College of Mt. St. Joseph

Kathleen A. Harper, Ohio State

Shan C. Huang, Sinclair Community College

Bill Kuhlman, St. Xavier High School

Yuhfen Lin, Ohio State

Maximiliano Montenegro, Ohio State

James Morris, Ohio State

Bill Ploughe, Ohio State

Frederick M. Reuter, St. Xavier High School

Megan Schwenker, University of Toledo

James Sullivan, University of Cincinnati

Kyle M. Walker, University of Toledo

Mary Wildermuth, Ohio State

John Wilkins, Ohio State

Mike Ziegler, Ohio State

Having said all that, I will say that it was a good deal of fun, too, as usual. You can see from the list that we had a lot of judges this year--and we needed them all. If only we'd had five more!

We had 137 projects (25 high school, 112 middle school) to judge and 2.5 hours to do 3 rounds of judging with only 20 judges. Our wonderful judges made it work. Our SOS treasurer will now send the checks to the student winners, then get reimbursed through the generosity of the OS/APS.

At the 10th to 12th grade level, our winners are:

1. **Mr. Samuel Bobb, Hayes High School**, Delaware, OH, grade 11; 50 Pennsylvania Avenue, Delaware, OH 43015, "Wireless power transfer by electromagnetic induction," \$150 award. (bobbland@midohio.net) Reviewer Comments: "the most direct physics application I saw"

2. **Mr. John T. Hagen, Aversville High School**, Defiance, OH, grade 10; 1877 Sherwood Drive, Defiance, OH 43512, "The Martian balloon," \$100 award. (hagen_06@hotmail.com) Reviewer Comments: "Wow."

Mr. Hagen won third in our last year's judging. Congratulations.

3. **Mr. Ryan M. Schultz, Barnesville High School**, Barnesville, OH, grade 10; 35481 TH 807, Barnesville, OH 43713, "Power to the coil gunnery," \$50 award. (schultz.ryan@gmail.com)

At the 7th to 9th grade level , our winners are:

1. **Ms. Megan A. Lankard, St. Joseph Elementary School**, Sylvania, OH, grade 7; 7524 Peachtree Lane, Sylvania, OH 43560, "How does temperature affect the rebounding of a tennis ball?," \$150 award. (klankard@buckeye-express.com)

Reviewer Comments: "picked up small deviation in cold ball and explained"

2. **Ms. Samantha N. Polasky, Incarnate Word Academy Elementary School**, Parma Heights, OH, grade 7; 3010 Tampa Avenue, Cleveland, OH 44109, "Is bigger better? Is a bullet-proof vest really bullet proof?," \$100 award. (meanmom921@aol.com)

Reviewer Comments: "got that it was a combination of m and v to cause damage"

3. **Mr. Patrick Vorbroker, Mason Middle School**, Mason, OH, grade 7; 14537 Wesley Court, Mason, OH 45040, "Examining the frictional and gravitational properties of a marble in a maze," \$50 award. (dianev@cinci.rr.com)

Reviewer Comments: "good data treatment"

Join me in congratulating our winners!

Apologies for any multiple copies!

Gordon Aubrecht
Judge Coordinator

Gordon Aubrecht
Professor of Physics
OSU Physics (614) 292-2574, FAX (614) 292-7557
Marion Campus (740) 389-6786, ext. 6250, FAX (614) 292-5817

check out my web sites through my home page

<http://www.physics.ohio-state.edu/~aubrecht>