

**APS Forum on Education
Executive Committee Meeting (teleconference)
Saturday, October 25, 2003
Minutes and Notes by Ernie Malamud**

Voting Members Present: Wolfgang Christian, Karen Cummings, Paula Heron, Ramon Lopez, Ernie Malamud, Richard Robinett, Gay Stewart, Michael Zeilik, Pete Zimmerman

Voting Members Absent: Robert Ehrlich, Paul Grant, Ken Krane

Non-voting Members Present: Fred Stein (APS Director of Education and Outreach Programs, PhysTEC PI/PD), Robert Beck Clark (Chair, CoE), Thomas Rossing (Editor)

Non-voting Members Absent: Charles Holbrow (AAPT President), Stan Jones (Editor), James Wynne (Webmaster)

Other Attendees: Ted Hodapp (Program Director, Div. of Undergraduate Education, NSF)

Wolfgang, Chair, called the meeting to order at 9:02 am Pacific Time.

There were no changes in the Agenda (**attachment 1**).

There were no corrections or additions to the minutes of our last Executive Committee meeting, April 7, 2003 in Philadelphia so they stand as approved.

Treasurer's Report and Budget Discussion

Ernie presented a brief Treasurer's report. The last APS financial statement, dated September 30, shows \$37,937 of available funds. The main change in disbursements since the last report is \$3,500 for co-sponsorship of Fred's Physics on the Road workshop. On the revenue side, the latest report shows \$1,935 as FED's portion of allocated investment income.

We then discussed ways to use available FED funds to further physics education. We went briefly through a list of suggestions from the Budget Subcommittee meeting in August (**attachment 2**).

A motion was made and approved to support the registration fee for new fellows at the meeting at which they are presented with their certificates.

Most of the discussion focused on two suggestions by Wolfgang (**attachment 3**).

The consensus was favorable to support teacher preparation workshops and/or special sessions at APS and joint APS/AAPT (regional) meetings. The amount approved is up to eight \$500 grants/year.

There was then an in-depth discussion of the proposed Physics Education Award (**attachment 4**) and the proposed fund raising plan to establish it. The APS Committee on Education and the APS Committee on

Prizes and Awards have now approved this award. It goes next to the APS Council for final approval. The expectation is that it will be approved and the first award can be made at the 2005 annual meeting.

There was discussion on how the award would be managed. Pete felt it is more appropriate that the "home" unit be an operating unit (FEd) rather than a policy-making unit (CoE). The assumption is that the APS President will appoint a selection committee. The initial selection committee will also be charged with recommending a name for the award. It is recommended that the selection committee also include AAPT representation to avoid duplication with AAPT Physics Education awards.

In order to begin making this award a fund of at least \$100,000 needs to be raised. Wolfgang proposed, and his plan was approved, that up to \$60,000 of this amount be raised by using FEd operating funds (up to \$30,000) in a 1-1 match. If the APS Council approves this plan, donations will be solicited from the FEd membership (as well as corporations and foundations) and the first \$30,000 raised will be matched with FEd funds.

Fred and Pete will present this at the upcoming APS Council meeting. Robert Clark commented that this Award has been talked about for so long that it is nice to see it becoming a reality. He commended Fred and Wolfgang for their efforts in making this happen.

Program Report (attachment 5)

Gay is to be congratulated for putting together a great set of sessions for the March and April 2004 meetings.

There was discussion about the special Committee on Minorities/Physics Focus session at the April meeting. Ramon said that CoM would like to see that some minority researchers are in this session. David Ehrenstein (Physics Focus) has been given some names to follow up.

Pete suggested that the APS current and newly elected presidents be invited to drop into the joint FEd/CSWP sessions.

We will hold an Executive Committee meeting during the Denver meeting; a possible time is Monday morning, May 3, 2004.

The Business Meeting/Reception time preferred time is Monday evening. We need to work with the conference organizers so that this is held in the main hotel and there are no last minute room changes (problems that occurred the last two years). At the reception the APS Fellow certificates will be awarded, and new officers and newly elected Executive Committee members introduced. Ernie asked if people would like to have an "Education Showcase" during the Business Meeting/Reception. The consensus was positive. Please send your thoughts on this to Gay. [For the uninitiated the format is to have 4 to 6 tables set up, each highlighting a specific topic (High School, Undergraduate Research, Informal Physics Education, PER etc.) with a person staffing each table at which informal discussions take place and literature may be available.]

There was then a discussion of ideas for the 2005 meetings. Ramon as Chair-Elect will be the Program Chair for the 2005 meetings and session proposals should be sent to him. The meetings are March 21-25, 2005 in Los Angeles, CA and April 16-19, 2005 in Tampa. [off-line Gay asked Ernie if he would organize a Physics Demo session at the LA meeting and he agreed].

The 130th AAPT National Meeting will be held in Albuquerque January 8-12, 2005. This is an opportunity for the FEd to sponsor a session by one of the APS Divisions. Michael Zeilik will organize this and mentioned the resources he can draw on: Sandia, Los Alamos, the National Radio observatory, the Santa Fe Institute. Michael will discuss with the next Program Chair (Ramon) which APS Division to choose.

APS Report

Fred brought us up to date on the successful PhysTEC program. He described the three levels of participation: the PPI's (Primary Program Implementation) to which a new site is being added at California State University – San Luis Obispo; the members of the Coalition who want to make changes in their undergraduate physics programs, are kept informed of the program and are recognized for the work they are doing, and finally a third level of 130 departments who have expressed interest in the program in writing.

FEd Election

Ramon has put together an excellent slate of candidates. Our by-laws determine the schedule for the 2004 election as follows: APS will be requested to send ballots to our members (email and mail) during the week of Feb. 16-20, 2004. The election will end on Friday, April 2, 2004.

This year APS will run our election.

In the first week in November members will receive a notice inviting them to nominate candidates (in addition to the slate the Nominating Committee has put together). Ramon will have APS send this notice. To nominate a candidate requires a petition signed by 1% of the FEd membership or 41 people.

Ernie's suggestions on candidate statements: get from each (1) a statement "why I want to be elected" and (2) a brief bio. I think it is fairer to give everyone the same word count limit for these two items.

Fellowship Committee

Ken Krane, Chair of the Fellowship Committee, has forwarded recommendations for fellowship. The fellowship certificates will be presented at the FEd Business Meeting during the Denver meeting.

APS Council

Pete commented that there was little of concern to the FEd on the Council agenda. At the next meeting the Physics Education Award will be on the agenda for approval.

Teacher Licensure

Ted had to log off before we reached this item. He is gathering information on licensure reviews in the various states. Executive Committee members are invited to continue to send Ted information on teacher licensure issues in the states in which they live. Ted will report on the status at the CoE meeting next April.

Newsletter

Stan Jones is stepping down after many years of editing one of the 3 issues/year. He will be missed! Wolfgang will send him a letter on behalf of the Executive Committee thanking him for this very valuable contribution to FEd activities.

Several suggestions were made for a new newsletter editor. Tom will advertise this opportunity in the fall issue, which is nearing completion.

We also discussed having theme issues with Guest Editors and also doing joint newsletters with other units. I believe it was left for Tom and me to pursue these suggestions.

In our last FEd meeting we approved mailing a hard copy of one issue/year to the membership. There was some discussion of which one this would be; it was left up to Tom and Ernie to decide.

Wolfgang suggested that we get FEd newsletters into the COMPADRE search engine. He will follow up on this.

APS Session at the 129th National AAPT Meeting (Sacramento) (attachment 6).

This session will be co-sponsored by FEd and the APS DPB (Division of Physics of Beams).

Next meeting

The next meeting of the Executive Committee will be a teleconference in February. Wolfgang will poll the committee and choose a date.

Meeting was adjourned at 10:51 AM, Pacific Time.

Attachments:

1. Agenda
2. Budget Subcommittee Report
3. Program Committee Report
4. Physics Education Award
5. Program Report
6. Introduction to the Physics of Beams and the Accelerators that Produce Them (APS session at the AAPT National Meeting, Sacramento, CA, July 31 – Aug. 4, 2004).

Attachment 1 (to minutes of the October 25, 2003 Executive Committee Meeting)

Forum on Education Executive Committee
October 25, 2003
12 a.m. – 2 p.m. EDT
9 a.m. – 11 a.m. PDT

AGENDA

Housekeeping items (10 minutes):

1. Approval of minutes of meeting of April 7, 2003 (Philadelphia Meeting)
2. Treasurer's report (Ernie Malamud)

Reports (40 minutes; reports should be submitted to membership in advance of meeting):

3. Budget Committee report (Ernie Malamud)
4. CoE report and APS Education Award (Wolfgang Christian)
5. Program Committee report (Gay Stewart)
6. Nominating Committee (Ramon Lopez)
7. Fellowship Committee (Ken Krane)
8. Report from APS (Fred Stein)
9. APS Council (Pete Zimmerman)
10. Teacher Licensure (Ted Hodapp)

Discussion items (1.5 hours)

11. Newsletter: Stan Jones is stepping down and will need to be replaced. Ideas for newsletter themes and authors.
12. Website: APS is hosting but how can it be improved? Added material? Links? Search?
13. Budget: We need good ideas on how to spend money.
14. Balloting: APS is now able to host Unit elections.
15. Education programs at APS meetings. Session ideas for 2005 including focus sessions.
16. APS Session at AAPT meeting. We should identify an APS Unit for 2005 summer meeting.

Next meeting

May 2004 in Denver, CO. Do we need another electronic meeting in February?

Attachment 5 (to minutes of the October 25, 2003 Executive Committee Meeting)

Three March Sessions (FEd has two slots and will be splitting one.)

We will also be sponsoring a workshop at the March meeting, as well as cosponsoring the reception following the women in science session with CSWP.

1. Tuesday 3/23/04 Joint DCOMP/FEd symposium on Open Source Software in Physics Education and Research:

- Paul DuBois, Livermore Labs, "Leveraging open-source software in large simulations at LLNL."
- Wolfgang Christian, Davidson College, "Open Source Physics: Java Code with Physics Content for Teachers, Curriculum Authors and Developers."
- Matthias Troyer, ETH (Zurich), "The ALPS Project: Open Source Software for Quantum Lattice Models."
Wolfgang Bauer, Michigan State, "Resource sharing of online teaching materials: the lon-capa project."
- Bruce Sherwood, North Carolina State University, "VPython: Python plus Animations in Stereo 3D."

Harvey Gould will chair.

2. Monday, March 22, 2:30. FEd Session on Research at Predominantly Undergraduate Research Institution

- Brian Andreen, Research Corporation, "Doing Physics with Undergraduates - Over Fifty Years of Research in the Undergraduate Setting"
- Prof. Peter J. Collings, Department of Physics, Swarthmore College, "Soft Condensed Matter Research: Interdisciplinary and Affordable"
- Prof. Anne Silversmith, Hamilton College, "Rare Earth based Sol-Gel Materials: An Intra- and Inter-Collegiate Collaborative Research Project"
- Prof. Enrique Jose Galvez, Department of Physics and Astronomy, Colgate University, "Undergraduate Labs Using Single Photons"
- Prof. John R. Brandenberger, Department of Physics, Lawrence University, "Atomic Spectroscopy with Laser Diodes and Undergraduates"

Wolfgang Christian will chair (offered \$500 in travel for Brian Andreen)

3. Wednesday 3/24, 2:30 p.m. Joint with CSWP Symposium on Keeping Women/Girls in Science, followed by a joint reception

- Elizabeth Simmons, "Pathways: K-12 outreach/education"
- Barbara Whitten, U. of Colorado, "Undergrad education - recently completed study"
- Mary Pavone, Dartmouth, "Dartmouth WISP program (undergrad research emphasis)"
- Liz Whitelegg, IOP, Director of Research at the Centre for Science Education in the UK. She specializes in research on physics teaching in schools, with a special emphasis on gender issues.
- Gerhard Sonnert, Harvard
- Laurie McNeil (Grad student emphasis; site visit program)

Frances Hellman will chair (FEd offered \$700 in travel for Sonnert)

Estimated attendance: 70. This is planned to be a mixed symposium/panel discussion, with each of the 6 speakers given 24 minutes (18 minutes to talk, 6 minutes for questions), then 36 minutes for panel/audience discussion. Followed by a reception (5:30-7:00).

April Sessions, officially we have 4 sessions, we are splitting 2, so are part of 6. We may have a 7th if we can organize something appropriate for COM and share their slot. None in the last time slot!

We will also be sponsoring a workshop at the April meeting, as well as the Physics Education Open House.

1. Sunday May 2 10:45 a.m. Joint with FPS Teaching Socially Relevant Physics

- Albert Bartlett, Professor Emeritus of Physics, University of Colorado at Boulder, "Arithmetic, Population, and Energy"
- Kerry Browne, Assistant Professor, Dickinson College, Department of Physics and Astronomy, "Teaching About Population, Climate and Environment"
- Art Hobson, Professor Emeritus of Physics, University of Arkansas, "Teaching Global Warming"
- Greg Mulder, Linn-Benton Community College, "Teaching About Energy in the 21st Century"
Brian Jones, Professor of Physics, Colorado State University, "Physics on the Road"

Gay Stewart will chair

2. Sunday May 2 2:30 p.m. FEd - Course Reform and PhysTEC

- Ron Thornton, "Overview of course reform"
- Ingrid Novodvorsky, "UAZ PhysTEC"
- Al Rosenthal, "WMU PhysTEC"
- Gay Stewart, PhysTEC site leader, University of Arkansas, "Introductory Physics Courses That Entice Majors and Future Teachers!"
- Carl Wieman, JILA, University of Colorado, "A New Vision of Science Education"

Fred Stein will chair

3. Saturday May 1 2:30 p.m. Joint with CSWP: Keeping Women and Girls in Science

- Prof. Gerald Holton, Mallinckrodt Research Professor of Physics and History of Science, Harvard, "How Women succeed in Science, and why some don't: Results from the "Project Access" study."
- Prof. Barbara Whitten, Department of Physics, The Colorado College, "What Works for Women in Undergraduate Physics?"
- Prof. Tricia Rankin, Department of Physics, University of Colorado, "Life as a tempered radical - from physics to social change"

Followed by a discussion session/panel discussion. Professor Margaret Murnane will chair

4. Monday May 3 2:30 p.m. FEd session on textbooks

- Greg Puskar, author
- Paul Zitzewitz, author
- Ray Serway, author
- Mark Grayson, senior editor at Holt, Rinehart and Winston.

Session chair John Hubisz

5. Saturday May 1 10:45 a.m. Joint session with FGSA, Alternative Careers

- Science policy: Benn Tannenbaum spent a fellowship year in Representative Markey's office, and is now working for the Federation of American Scientists as the Senior Research Associate for their Strategic Security project and is FAS's liaison to the Hill (\$500 support)
- Science journalism
- Industry
- Govt/national labs

Chair: Anne Cattla

6. Tuesday May 4 8:00 a.m. Joint Session with DNP on Undergraduate research

- Warren Rogers from Westmont College, who has organized over the last few years a CEU (Conference Experience for Undergraduate), where undergraduates who had research opportunities come to the DNP meetings and present posters, listen to talks especially for them.
- Somebody from NSF about the MRI funding targeted to undergrad institutions
- Nuclear experiments in undergraduate laboratory experience

**7. Possibly Sunday May 2 10:45 a.m. Joint with COM (maybe a freebie for us if it can be organized)
Physical Review Focus**

Possibly TWO focus sessions on physics education research.

Attachment 4 (to minutes of the October 25, 2003 Executive Committee Meeting)

Excellence in Physics Education Award Committee on Education

Awarded yearly to recognize and honor a team or group of individuals (such as a department), or possibly a single individual, who have exhibited a sustained commitment to excellence in physics education. Such a commitment may be evidenced by, but not restricted to, such accomplishments as,

- Outreach programs
- A specific program or project that has had a major ongoing influence on physics education at the national level
- Outstanding teacher enhancement or teacher preparation programs over a number of years
- Long-lasting professional service related to physics education that has had a demonstrated positive impact

Nominations must be submitted to the Chair of the Selection Committee. A complete nomination packet consists of the following:

- A letter of nomination outlining the candidate's significant contributions related to education in physics
- A current curriculum vita
- A minimum of three additional supporting statements, of which at least two should come from individuals not associated with the nominee's workplace

The awardee receives recognition during the APS April Meeting. Nominations must be received by July 1.

Attachment 3 (to minutes of the October 25, 2003 Executive Committee Meeting)

To: APS Forum on Education Executive Committee
Re: Expenditure of funds.
From: Wolfgang Christian
Date: October 24, 2003

I would like to propose that the FEd Committee approve the following two budget items at tomorrow's meeting:

- 1) APS Forum on Education will make available eight \$500 grants per year to support teacher preparation workshops and/or special sessions at joint APS/AAPT meetings.
- 2) The APS Forum on Education matches APS member contributions given for the establishment of the APS Education Prize up to a total of \$30,000.

The first proposal is base would encourage outreach and APS/AAPT collaboration at section and regional meetings. The grants are modeled on the AAPT teacher preparation grants that were approved last summer. (See attached.) Our grant guidelines could be similar and I expect that organizers who apply for the AAPT grant may also apply for an APS/FEd grant. This would give workshop organizers an incentive to involve APS education and outreach programs such as PhysTEC in their workshops.

The APS will need to raise an endowment if the Education Award is approved. It is almost certain that we will solicit contributions from FEd members and I would like to ensure that this solicitation is successful. We have a large surplus (because we are no longer mailing the newsletter) and might be in danger of losing this surplus if we do not spend it wisely. Matching member contributions seems like a great incentive and will help insure the fundraising effort is a success.

Summer issue of the AAPT Announcer, page 22, is reproduced below.

The AAPT Executive Board has made available a limited amount of financial support to encourage AAPT Sections to actively address issues concerning the preparation of K-12 teachers.

While there are many teacher preparation issues that can be reasonably discussed from a national perspective, there are very important teacher preparation issues that vary from region to region, state to state, and school district to school district. For example, local certification requirements, curricula, textbooks, and examinations are often based on statewide standards. In these and other ways, discussions and actions about teacher preparation and the success of teachers in their classrooms are very much local and regional issues.

To support efforts to engage our members and other teachers in discussions and actions about teacher preparation, AAPT has allocated a modest sum of money to be made available to AAPT Sections. It is not AAPT's intention to propose an agenda for such discussions. The agenda should surely reflect the priorities and issues of importance to the individual AAPT Sections and to the teachers they serve.

The AAPT Executive Office is prepared to receive from its Sections brief (approximately one page) proposals for sessions to be held at Section meetings that address local concerns about teacher preparation and mentoring. The proposal should identify the topic and rationale for the session, the Section meeting at which the session will be offered, and the name of the person responsible for organizing the session.

In response to such proposals, AAPT will provide grants of up to \$500 to support the efforts of Sections for activities consistent with these general objectives. The proposals should be sent by the Section

Representative to the AAPT Executive Officer, who will determine which proposals will be funded. While there is no deadline for proposals, currently available funds will support about 15 such proposals.

Sections receiving this support will be encouraged to share their experiences with other Sections, perhaps via presentations at AAPT committee meetings, at AAPT national meetings or at meetings of Section Officers or Section Representatives.

AAPT is publicizing this program in a variety of venues. Proposals and questions should be addressed to the AAPT Executive Officer, Bernard Khoury, bkhoury@aapt.org.

Attachment 2 (to minutes of the October 25, 2003 Executive Committee Meeting)

**FEd Budget Subcommittee Discussion, August 15, 2003
Notes by Ernie**

Present (all): Wolfgang Christian, Ken Heller, Ernie Malamud, Tom Rossing, Dean Zollman
Item #'s refer to attachment 2 to minutes of the April 7, 2003 Executive Committee Meeting.

(new item). **Kick start the Physics Education Prize.** (Wolfgang). Get the prize going in 2004 or 2005 using FEd funds, before APS raises the required endowment. FEd could do this for a limited period (1-3 years) while the capital campaign is in progress. FEd members could also be solicited for donations. The prize committee will probably consist of the Chair and past-chair of COE, the Chair and past-chair of FEd plus 2 more people appointed by APS. It is not known if APS would accept such an arrangement.

Action item: Wolfgang will discuss this at the COE meeting in October.

(1). **Outreach Handbook.** (Tom). Resource material for physicists to use to promote physics in K-12 schools and contribute to informal science education. (museums and media). It was generally agreed that such a handbook would be useful. However, we did not reach consensus on whether the resource guide should be hard copy or on the web. Ken likes having nice pictures available for download to use in a talk. Also a video of a physics demonstration can be useful for a physicist to look at while preparing a talk for a K-12 classroom. Wolfgang pointed out that there may be a forthcoming NSF grant to develop a PER digital library, and the resource material we are discussing could be a subset of such a library.

(3). **Registration waiver for high school physics teachers for March and April meetings.** We agreed it was desirable to encourage high school physics teachers to attend APS meetings. A registration waiver would be for the full meeting so the teachers could attend all sessions. We agreed to budget \leq \$3,000 for the 2004 March meeting and \leq \$3,000 for the 2004 April meeting. Teachers in the vicinity of these meetings (Montreal, Denver) would be notified of the possibility of this registration waiver via AAPT, NSTA's, contact with PTRAs etc. Depending on how much fee reduction APS is willing to support, FEd funds could pay for 10 teachers at each of these meetings. This would be on a "first come first served" basis. Depending on how well this works in 2004 FEd could continue it in 2005.

Action item: Wolfgang will discuss with Judy having a fee reduction with balance from FEd funds. [done: email from Wolfgang to Judy 8/15]

(4). **Awards at State Science Fairs.** (Ken). This would be a plaque (\$50 - \$100) for the best physics project in each state fair (up to 50). The plaque would be clearly engraved that is awarded by the APS Forum on Education. The plaque would be mailed to the person in each state in charge of the fair, who would determine how to award it, get it engraved with the name(s) of the winner, and inform APS with the name and some information on the winning project.

Action item: Ken will discuss with Fred Stein how to organize it. [done 8/15. email from Ken, 15 Aug: "I spoke to Fred Stein and he agreed that the science fair awards would be a good thing. He was going to check to see if there was something similar by AAPT. He will get back to us on that and a proposal to divide the necessary work to get this off the ground between his office and the FED."]

(11). **Print and mail the newsletter (or some of them).** After considerable discussion we decided that one issue per year would be printed and mailed to all FEd members. (This would be the same as the on-line pdf version, so no additional work is required since APS will do the printing and mailing). I think we agreed this can begin with the fall issue (Tom is Editor). This fall issue will also "advertise" the contents of the (previous) on-line spring and summer issues, more than just a table of contents, but a short summary of each article. (Ernie volunteered to write this). The fall issue will be on-line as well.

Attachment 6 (to minutes of the October 25, 2003 Executive Committee Meeting)

Introduction to the Physics of Beams and the Accelerators That Produce Them

**Session co-sponsored by the APS FEd and the APS Division of Physics of Beams (DPB)
At the 129th National AAPT Meeting, Sacramento, CA, July 31 – Aug. 4, 2004**

Report by Ernie Malamud. COE Meeting, October 18, 2003

Background

Many have lamented the passing of the national APS/AAPT joint meetings. Wolfgang Christian, Chair of the Forum on Education (FEd) put forth the following idea in our April 2003 Executive Committee meeting. Have the FEd sponsor APS units to hold a session at an AAPT meeting. An APS division asked by the FEd would run an invited session covering several related topics. A different division would be asked to organize a session at each AAPT national winter and/or summer meeting. The FEd would pay for handouts, host a reception after the session, and, if necessary could fund some travel expenses and registration waivers. The process will be for the FEd Program Chair to contact AAPT and the chosen APS Division to make this happen.

Implementation

DPB will be the first of the APS Divisions to try this outreach idea with presentation of a DPB invited session at the 129th AAPT National Meeting in Sacramento, July 31 – Aug. 4, 2004. This has been approved by all 3 organizations: AAPT, FEd and DPB. Since I wear two hats, one as Secretary-Treasurer of FEd and the other as Chair of DPB's Education and Outreach Committee I have volunteered to put the session together. This will be convenient since I live only 1-1/2 hours drive from Sacramento. Our DPB Education and Outreach Committee will select speakers primarily from the wealth of accelerator physics talent in Northern California at 3 major national labs: SLAC, LBNL and LLNL.

The session proposal has been submitted. The invited speaker list is due March 12, 2004 and the abstract deadline is April 4, 2004. FEd has budgeted funds for duplication of curriculum materials and a reception following the session. Four 30-minute talks (including discussion) will be geared to an audience of high school and college physics teachers. Each of the four speakers will be encouraged to provide handouts that teachers can take away. The organizers will work closely with members of AAPT for guidance to maximize the usefulness of this session to the physics education community.

Speakers will be chosen who among them can present a wide-ranging comprehensive picture of different aspects of beam physics and accelerators and their applications to diverse research areas. Possible topics: accelerators used in high-energy physics; light sources and their applications; accelerators used in fusion research; industrial and medical applications of accelerators

Future

This session will be a model for other APS Divisions in future years. The idea is to do this once or twice per year, rotating among the 14 APS Divisions. It is seen as a way to bring the APS and AAPT closer together and also provide resource material for high school and college physics teachers.