Date: April 15, 2015

Faculty: __X____

Guild:

Semester intended for development (in lieu of check mark, indicate year for the semester in which you are applying):

Summer: __X__ Fall: _____ Spring: _____

FACULTY /GUILD DEVELOPMENT APPLICATION Suffolk County Community College

Use this form if you are applying for funding to be used for faculty development.

Faculty development is considered to be, but not limited to, any course(s) or workshops that will enhance your professional performance. This funding will not be approved for coursework intended to fulfill educational promotion requirements.

This form shall be submitted <u>electronically</u> to the Office of the Vice President for Academic and Student Affairs no later than April 15, 2015.

1. Name:

2. Current Discipline: Physics

3.	Degrees:	Degree	Field	Year Awarded
		PhD	Astronomy, Astrophysics	3 2004
		MSc	Astronomy, Astrophysics	s 1999
	•	BSc	Physics	1997

- 4. Proposed development area: Physics
- 5. Previous experience and education related to proposed development area: The American Association of Physics Teachers (AAPT) has over 8000 members and is the strongest and largest "professional physics science society dedicated to the pursuit of excellence in physical science education in the United States". There are two meetings every year: the summer meeting has more than 1000 attendees, whereas the winter meeting is still large, with about 700 participants. I have been a member of the AAPT for several years, and have been recently appointed an official member of the Committee on Physics in Two-Year Colleges. My three-year term in this committee began in 2015 and will end at the close of the 2018 winter meeting. It is my responsibility to actively collaborate on planning sessions and workshops for the national meetings, and I am expected to attend the meetings as regularly as possible. I have also participated and presented in past meetings, and plan to present a poster at the 2015 summer meeting.
- 6. Professional activity you plan to attend for faculty development: (attach a full description if necessary)

I plan to attend, participate and present at the 2015 AAPT Summer Meeting in College Park, Maryland, July 25-29. I have also been invited to participate in the AAPT Two-Year College Leadership Institute on July 24. During the AAPT meeting, I will participate in the Two-Year

College Committee meetings, and other committees I have become involved with as well. On July 25 and 26 I will attend daylong workshops on new technology and methodology in physics teaching. These workshops have limited seating, represent an additional cost, and must be selected in advance, during an early registration. They are important for my professional development and provide networking opportunities. During the week, there are a variety of presentations, special events and activities. The schedule can be busy, from 7am to 10pm. Typically, my poster presentation will be scheduled for Monday, July 27. I have already exhausted my entire contractual conference attendance budget. I will attend this meeting and leadership institute even if only partially funded by this application.

7. A. List goals you hope to achieve in this proposed professional activity:

These are the goals I plan to achieve at the AAPT meeting:

- Participate in the AAPT Two-Year College Leadership Institute on July 24, where leadership skills will be fostered through experiential learning exercises and moderated discussions (the letter of invitation has been attached to this application).
- Present a poster on "A Five-Year Assessment Plan for Physics at SCCC", where I describe the assessment tools that have been used, and those planned for future semesters (the confirmation of abstract submission has been attached).
- Participate in the following workshops (receipt has been attached):
- Sat, Jul 25, 8am-5pm, W10: Teaching Programming and Problem Solving using LEGO EV3 Robotics. Cost: \$85
- O Sun, Jul 26, 8am-12pm, W22: Explorations in Arduino Physics: Ideas and Experiments that Integrate this Low-cost 8-bit Microcontroller into your Classroom!. Cost: \$120
- Sun, Jul 26, 1-5pm, W40: Strategies to Help Women Succeed in Physics Related Professions. Cost: \$60
- Participate on several committee meetings, including the Two-Year College committee to which I am an official representative. I am also increasingly engaged in the Women in Physics committee.
- Attend as many presentations and special events as possible (the program schedule is presented at http://www.aapt.org/Conferences/sm2015/).
- Explore new laboratory devices at the AAPT Exhibit Hall, which typically hosts more than 30 companies and industry leaders.
- Network and exchange teaching ideas with colleagues.
- 7. B. Explain how this professional activity will enhance your skills in your discipline or areas of responsibility.

Essentially, by attending these meetings, I learn about new ideas for improvement of teaching techniques, and these ideas are transferred to the classroom at SCCC.

For example, at the last AAPT meeting in January in San Diego, I learned about ExpertTA, an online homework and tutorial system for physics. I have been using WebAssign for a few years now, but ExpertTA grades the steps used to solve equations, not just the final results — an aspect that is particularly important in physics. I have been granted a trial period, and plan to adopt it in class next fall for the PHY245 (Physics 3) course. When I returned

from the meeting, I shared what I had learned about ExpertTA with my colleague Prof. Shelly Shumway, who liked it and is currently using it in her class already.

At the last meeting I participated in a workshop on "Astronomy and Physics Simulations for Computers and Tablets", and I currently use some of these examples in classroom.

Among several other examples, I have learned about plot.ly, a free online tool for importing, analyzing, graphing and sharing data. In my mind, this is clearly a tool I will teach the STEM scholars when I can focus on helping with CHE297 (Introduction to Research Methods – taught by Prof.

in my department). This is ultimately a collaborative course in our department, to which I have made some contributions in the past and plan to do more in the future.

I have also played with a set of high tech beamed LED lights that can be used for many demonstrations, instead of more expensive lasers. It was a revelation, and it is in our department's wish list for the next time we are able to purchase laboratory equipment.

I gather many posters on the reasons to learn physics, awareness about career opportunities, societies and web resources for students. Many of these are currently displayed in our corridors at the Smithtown Science building.

Thanks to these meetings, I can share with my students what I have learned on the talks from illustrious scientists that I have seen at the AAPT. In San Diego, Sean Carroll was presented with the AIP Gemant Award, and gave a talk on one of his books, on the idea of interpreting time as an arrow that has been set in the current direction in our universe (we cannot go backward), but may have other directions in alternative universes. Sean Carroll is a renowned theoretical physicist currently at Caltech.

But more than anything, I think I collect more ideas from networking with my colleagues, from meetings in the corridors, conversations during a meal, comments and discussions about the presentations, etc. This is our dedicated time to talk about physics and share results about teaching and learning.

Overall, this is a meeting to enhance the understanding and appreciation of physics through teaching. Therefore, in respect to my field of work, this is one of the most appropriate uses of the faculty development grant.

8. Describe how completion of this professional activity will benefit the college.

My attendance to the summer AAPT meeting will benefit the college through:

- Recognition that SCCC has engaged physics faculty, strong physics courses and program. I
 will be presenting a poster on the physics assessment plan at SCCC.
- Recognition that SCCC is an institution that supports professional development and improvement of teaching effectiveness. My resulting deeper appreciation of the teaching profession also leads to more enthusiastic involvement from students, and retention.

- The training of SCCC faculty on leadership skills during the AAPT Two-Year College (TYC) Leadership Institute. This is an opportunity limited to few TYC selected faculty. It will involve experiential learning exercises and discussions. A schedule has not been provided yet, but it will cover the whole day on July 24.
- My fellow physics instructors at SCCC get my feedback about the meeting and specific new trends and techniques: I share my ideas with them and request their input. We are a small group of full-time physics instructors (3, including myself), and do not have pre-scheduled meetings, but we do exchange ideas in person. I also have the habit of posting most of my course material online. I have created a link where I share many slides, labs, and assignments with new adjunct faculty. I have become quite involved in helping new adjunct faculty adapt to the characteristics of some physics courses.
- Finally, the college will benefit from raising the level of physics teaching in our classrooms.
- 9. Is there an anticipated cost for your professional development activity? Provide documentation.

The main source of information is http://www.aapt.org/Conferences/sm2015/

DESCRIPTION	ESTIMATED COST
Registration (member value)	370.00
Workshops (member value):	265.00
o Sat, Jul 25, 8am-5pm, W10: Teaching Programming and Problem	
Solving using LEGO EV3 Robotics. Cost: \$85	
o Sun, Jul 26, 8am-12pm, W22: Explorations in Arduino Physics:	
Ideas and Experiments that Integrate this Low-cost 8-bit	
Microcontroller into your Classroom!. Cost: \$120	
o Sun, Jul 26, 1-5pm, W40: Strategies to Help Women Succeed in	
Physics Related Professions. Cost: \$60	
Airfare (see printout attached)	215.00
Conference hotel (based on previous cost of around \$140 per night + tax	960.00
≅ \$160) for 6 nights (July 23-29)	
Meals for 5 days (3 meals a day for \$12 per meal)	180.00
TOTAL	\$1990

214,20

10. Anticipated need for released time. Explain.

This is a summer meeting, no need for release time.

I have reviewed the contract language (Article V.D.5, (pp29-30) relating to Faculty Development and Retraining Leaves. All questions must be completed in order for your application to be considered. A written report will be required within 8 weeks of completing all course work.

	April 15, 2015.
Signature	Date
Rev. 01/2014(?)	

Area Committee Letter of Appointment.
Also, I am listed as a member of this committee here: http://aapt.org/aboutaapt/organization/tyc.cfm





American Association of Physics Teachers

October 6, 2014

Dear

It is my pleasure to inform you that the Nominating Committee has nominated you to be a member of the Committee on Physics in Two-Year Colleges of the American Association of Physics Teachers. Your three-year term of office officially begins at the end of the 2015 Winter Meeting in San Diego, CA and will end at the close of the 2018 Winter Meeting, the location of which has yet to be determined.

As described in the current edition of the Area Chairs' Handbook, "Area Committees play a major role in the governance of AAPT. They advise the Executive Board, the Executive Office, and the Association at large on issues relating to their particular areas of focus. They are considered the Association's intellectual resource and knowledge base in these areas. They are looked upon to identify related issues and practices of significance and to carry out projects and initiatives that will advance education in physics in general and the mission of AAPT. They are encouraged to take leadership roles in their areas of interest and respond and support the Association's strategic priorities and interests. In short, they serve the Association as both think tanks and work groups in their areas of interest." Planning sessions and workshops for the national meetings is a substantial part, but not the entire work of the Committees.

As you probably know, each Area Committee meets at each national meetings of the AAPT. Members of each Area Committee are expected to attend the meetings of the Committee as regularly as possible—and to take an active role in the work of the Committee, not only at meetings but also between them. I believe you are already aware (a) that AAPT has no funds to underwrite the costs for members of any Area Committee to attend, and (b) that members of Area Committees must be members of AAPT throughout their term of service on the Committee. Area committee members are encouraged to electronically participate in meetings if they are unable to attend the national meetings.

On behalf of AAPT and the ideas it represents, we would like to invite you to join this Committee. The Association and our members will greatly benefit from your leadership and service, but the impact of your participation will go far beyond AAPT. Your work will enrich the larger community of physics educators and is in line with AAPT's goal of advancing physics education as a whole.

Sincerely,

Wolfgang Christian AAPT Secretary

Wolfgang Christian

Strengthening Physics Education. Supporting Physics Teachers.
One Physics Ellipse, College Park, Maryland 20740-3845 Phone: 301-209-3311 FAX: 301-209-0845 Website; www.aapt.org

Invitation to the AAPT Two-Year College Leadership Institute, on July 24, 2015, at the AAPT headquarters in College Park, MD.



Glenda Denicolo <glenda.denicolo@gmail.com>

TYC leadership institute invitation

Haag, Brooke <HaagB@arc.losrios.edu>

Fri, Feb 27, 2015 at 2:44 PM

Dear

You have been nominated as a standout physics faculty member to participate in the AAPT Two-Year College Leadership Institute. The Institute will involve experiential learning exercises and moderated discussions to foster leadership while addressing a range of skills from effective communication to work-life balance as you connect with other

like minded peers from across the nation. You will also have the opportunity to develop an action plan applying lessons learned to improve a challenging situation in your work life.

We hope you can join us! Participation is limited, so please

RSVP

and register online

no later than March 20th. And please feel free to contact us with any questions. We look forward to seeing you on July 24th at AAPT headquarters in College Park!

Sincerely,

TYC Leadership Institute Organizers

Beth Cunningham,

Executive Officer, American Association of Physics Teachers bcunningham@aapt.org

Brooke Haag

Assistant Physics Professor, American River College haagB@arc.losrios.edu

Todd Leif

Science Instructor, Department Head, Cloud County Community College tleif@cloud.edu

Tom O'Kuma

Physics Instructor, Lee College

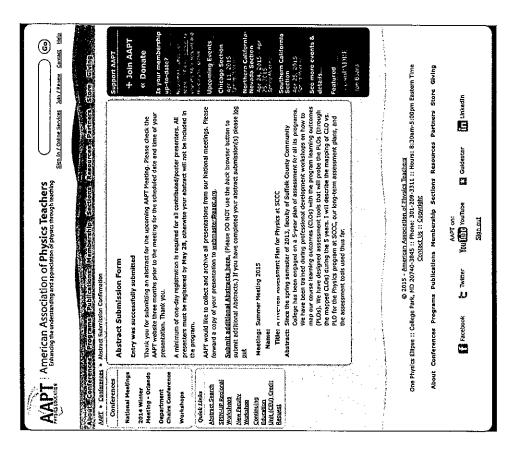
tokuma@Lee.edu

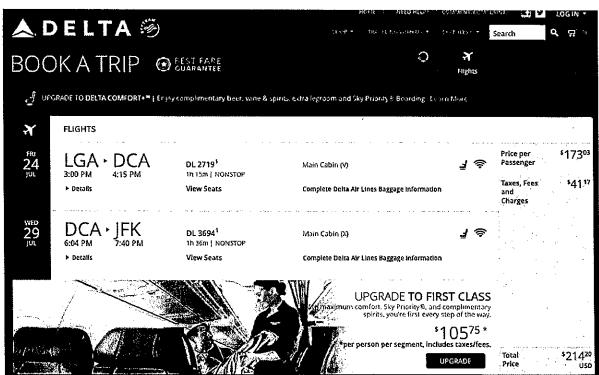
Scott Schultz,

Science Division Chair, Delta College

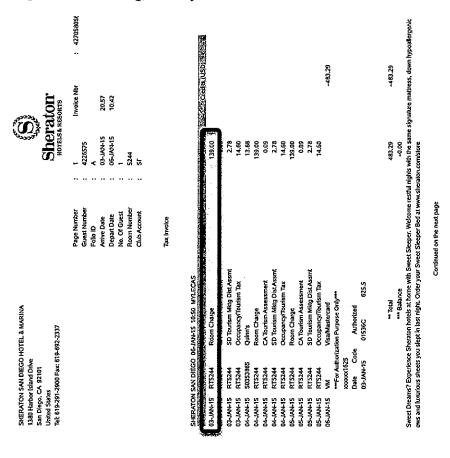
sfschult@delta.edu

Confirmation of submission of abstract

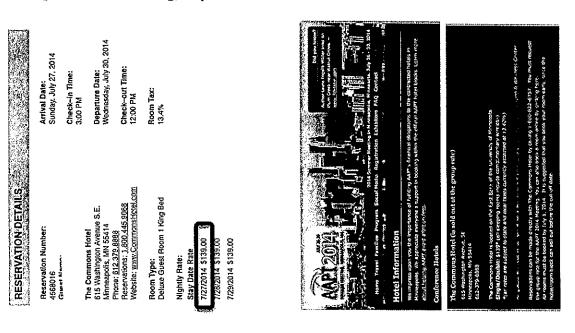




Evidence of PREVIOUS conference hotel costs (current estimate is based on these). San Diego, AAPT meeting, January 2015.



Minneapolis, AAPT meeting, July 2014.



Current workshop costs (for the 2015 Summer meeting):

Date/Time	<u>Organizer</u>	Cost	<u>Seats</u>
Sat, Jul 25	Jeremy Benson	Members: \$85	Max: 16
8:00 a.m5:00 p.m.		Non-members: \$110	Available: 16
ids love robots! And ever	yone loves playing with LEGOs	, but did you know there's a lo	we can lear
Read more			
22: Explorations in A	duing Physics: Ideas and	Experiments that Integra	stathia I ass at O bi
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		Cost	Scats
<u> Date/Time</u>	<u>Organîzer</u>	COSE	30418
	<u>Organizer</u> Brian Huang	Members: \$120	Max: 24
Sun, Jul 26		THE PARTY SECTION OF THE STATE OF THE SECTION AND SECTION ASSESSMENT ASSESSME	
Sun, Jul 26 8:00 a.m12:00 p.m.	Brian Huang	Members: \$120 Non-members: \$145	Max: 24 Available: 24
Sun, Jul 26 8:00 a.m12:00 p.m, sing the simplicity and po	Brian Huang	Members: \$120	Max: 24 Available: 24
Sun, Jul 26 8:00 a.m12:00 p.m,	Brian Huang	Members: \$120 Non-members: \$145	Max: 24 Available: 24
Sun, Jul 26 8:00 a.m12:00 p.m. sing the simplicity and po Read more	Brian Huang	Members: \$120 Non-members: \$145 unity, we have created several	Max: 24 Available: 24
Sun, Jul 26 8:00 a.m12:00 p.m. sing the simplicity and po Read more	Brian Huang wer of the open-source comm	Members: \$120 Non-members: \$145 unity, we have created several	Max: 24 Available: 24
Sun, Jul 26 1:00 a.m12:00 p.m, ing the simplicity and po Read more O:Strategies to Help	Brian Huang wer of the open-source comm Women Succeed in Phys	Members: \$120 Non-members: \$145 unity, we have created several	Max: 24 Available: 24 tools and hands

Registration costs (I am already registered, below is the receipt):

		American Association of Physics Teachers			
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Purchase Confirmation	ıfirmati	uo			
Thank you for your your records.	purchase	Thank you for your purchase. An email confirmation will be sent to your address of record. You may also print this page for your records.	ss of record.	You may also pi	int this page for
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Payment method: Credit card Order Number: 80790.00 Transaction Numbers:	Credit a 3790.00 ers:	שנק			
Detail					
Code	Type	Description	Quantity	Unit Price	Extended
SM15/REG P	MEETING	Full Meeting Registration		\$370.00	\$370.00
SM15/SPEC6 P	MEETING	Two-Year College Breakfast	_	\$26.00	\$26.00
SM15/W10 P	MEETING	W10: Teaching Programming and Problem Solving Using LEGO EV3		\$85.00	\$85,00
SM15/W22 P	MEETING	W22: Explorations in Arduino Physics: Ideas & Experiments	H	\$120.00	\$120.00
SM15/W40 P	MEETING	W40: Strategies To Help Women Succeed In Physics Related		\$60.00	\$60.00
SM15/CW03 M	MEETING	WebAssign: Enrich Your Physics Course W/WebAssign Resources	_	\$0.00	\$0.00
SM15/SPEC19 M	MEETING	Win a Free Night At the Holiday Inn College Park		\$2.00	\$2.00
	:		F ; & .	Total: Payments:	\$663.00
			a	Balance:	\$0.00
Registrant Detail					
Registrant ID		Registrant Name Meeting	5		Confirmation Number
82688	:	2015 / Collegi	2015 AAPT Summer Meeting College Park, MD		80790
-		and the second			Continue Print

Faculty Development, Summer 2015 grant

Beneficiary:

Assistant Professor of Physical Sciences

Proposal: to attend and present at the American Association of Physics Teachers Summer Meeting in College Park, MD, July 25-29, and participated in the Leadership Institute on July 24.

Amount: \$1990.00

Report

On Friday July 24, I participated in the Leadership Institute organized by the Two Year College (TYC) committee, sponsored by AAPT. The venue was at the American Center for Physics, in College Park. We were 13 participants, guided through the activities by 8 facilitators/mentors. The goal of the day was to help prepare the next generation of TYC physics faculty for future leadership roles. The Institute provided an opportunity for us to develop leadership skills aimed at issues specific to our institutions. It also included effective communication, work-life balance, finding leadership strengths, understanding the national context for science education, framing challenges, leading curricular changes, and valuing diversity.

The day started with a physical activity about change. In pairs, we were asked to turn our backs to each other, make 10 alterations in our appearance, and check for those alterations on each other later. This was repeated about 5 times: the purpose of the exercise was to highlight the challenges of making and accepting changes away from our comfort zone. In a plenary session afterward, we were asked to draw comparisons with our work lives. The day progressed with a few role-playing scenarios (student/faculty interacting with dean) to emphasize the role of communication/negotiation/persuasion; and a couple of other physical activities involving group collaboration/teamwork/cooperation.

The facilitators gave short presentations during the day. We were asked to reflect on our growth in the past years. We completed a Gallup Strength Finder test to determine our strengths as leaders and educational practitioners. One of the purposes was to more easily recognize the strengths in others, and to learn how to interact with others when in a leadership role.

At the end of the day, we gave a short presentation of up to 2 slides called "my leadership project", that essentially summarized our future goals: the most ambitious projects we had for ourselves. I chose to focus my presentation on "Integrating SCCC students in astronomy research", because this is a challenging topic for me.

I knew most of the facilitators and I already viewed them as mentors. Besides the knowledge I gained during the Institute, this was a fantastic opportunity to strengthen my connections with this resourceful, experienced and approachable group. We plan to create an online support community for TYC physics faculty out of this experience. This was only the second installment of the Leadership Institute, which will now be organized every 2 years. Participation occurred by invitation only.

On Saturday July 25, I participated in the full-day workshop "Teaching Programming and Problem Solving Using LEGO EV3 Robotics". We were briefly introduced to the principles of a loop method to "discuss-model-test", and quickly given the challenge to build a robot that moves along a straight line for 1 meter, turns 180 degrees, and comes back to the origin. I had never played with this material before, so this was an eye-opening challenge: I started from zero, as many of our students do. It was also extremely exciting,

1	3	Gillian is a high school master teacher from Smithtown, NY. I met her during a Long
- 1	,	Island-based contest called Teslamania a few years ago. Prof. Helio Takai (BNL) and
1	• • •	I were at hand to congratulate our Long Island fellow physicist.
1		Homer L. Dodge Citations for Distinguished Service to AAPT
-		There were 5 faculty citations, and one of them was to Scott Schultz, who is also
L		another leader in the TYC community, and one of our TYC mentors.
	12-1:30pm	Topical Discussion: Web Resources for Teaching Astronomy - panel
1		I have a PhD and research experience in Astronomy, and I want to remain engaged
1		in the field. In this session, the whole group tested a few interactive simulations
-		available online. We completed handouts associated with the activities as if we were
		students, and made suggestions for improvements and changes.
-		https://phet.colorado.edu; http://ivv.rit.edu/red/v/;
-		http://www.compadre.org/ivv/
ſ	1:30-1:50pm	Student Evaluation of Instruction and Their Relation To Students' Conceptual Learning
	-	Gains – panel
1	·	The main result was the lack of correlation between the students' evaluations (how
		students judge a class/teacher) and a widely used conceptual physics test called
-	,	Force Concept Inventory (FCI), which is applied at the start and end of the semester
		to measure learning gains.
Ī	1:50-2pm	Replacing Lab Reports with Lab Notebooks: Developing and Assessing Authentic
	•	Scientific Communication Skills
-		Stanley et al., Colorado Univ. at Boulder
	n -	This is an ongoing project examining how traditional lab reports are probably not
	.*	preparing students who pursue research careers. The reason is that in a research
ı	:	lab, the type of annotations taken in a notebook hardly resembles the structure of a
		traditional lab report taught in class.
ſ	2:30-3pm	PhysPort: Supporting Physics Teaching with Research-based Resources
-		Sarah McKagan, AAPT
		This was a great find. I knew about the Physics Education Research (PER) group at
		AAPT, and its user website. But it was not friendly nor easily accessible as it is now in
	1	this new version: <u>www.physport.org</u> . I obtained a copy of the PowerPoint slides of
		this presentation, and will present the highlights of this talk to my physics colleagues
		at SCCC, as the resources gathered there are very important in our job.
	4:-4:30pm	Developing Activities and Using Computational Modeling in University Physics
		Dwain Desbien, Estrella Mountain Community College, AZ
		Dwain shared his positive experience in introducing computational modeling in
	•	introductory physics for the first time this past semester.
	4:30-5pm	Projects and Practices in Physics – Inquiry-based Computational Modeling
		Caballero et al, Michigan State Univ.
1		This was the presentation of a very different classroom model for introductory
		physics, which is set to become the standard model at Michigan State Univ. The
f	•	students are introduced to 6-8 short computer-modeling projects during the
		semester.
	5:30-5:40pm	A LEGO Spectrometer
[Helio Takai, BNL
	7:30-8:30pm	APS Plenary: Is SUSY (supersymmetry) the Guardian of Our Reality from Oblivion?
		S. James Gates Jr., Distinguished Univ. Prof, Univ. of Maryland
1	8:30-10pm	Poster session
	_	There were over 100 posters in the topics: Teacher Training/Enhancement;
ļ	·	Technologies; Lab/Apparatus.

On Wednesday July 29, I departed the hotel (which was a 30 min walk away from the meeting) at 10:30am towards Baltimore airport.

I believe that it is essential to our development and growth as physics instructors to participate in meetings such as the AAPT and its workshops. I plan to give a presentation to my department on Wednesday, September 9, room T-211, at 11:15 am (date must be confirmed with Department Chair).

I will be attending winter and summer AAPT meetings in the next years, as it reinvigorates and energizes me with ideas. Besides, as a representative in the TYC committee, I must attend 4 out of 6 meetings for 3 consecutive years. I will be incurring in some personal expenses, as well as requesting reimbursement from the Contractual Conference Attendance fund, and eventually again from the Faculty Development grant.

I thank you very much for supporting me in these extremely valuable experiences.

August 05, 2015

The following attachments include supporting material such as meeting schedules and photos.

At the Leadership Institute, open discussion session.

