



American Association of Physicists in Medicine
Delaware Valley Chapter
Quarterly Newsletter – Winter 2007

Presidents Vault:

September 2007

Though Thanksgiving is several weeks in the past, I am still digesting the enormous amount of Turkey I ate. Thanksgiving has always been time when my small family goes back home and spends time with my extended family. It truly is a holiday of reconnecting and catching up on how everyone's year has been going. With that in mind I look back to our last local chapter meeting. We had Kate Spillane and Teh Lin present talks, which were followed by a time of fellowship. I hope it will be remembered as a time of reconnecting with some colleagues and friends in a relaxed environment. When I was an undergraduate and a graduate student I had the opportunity to spend time with many of my Professors out of the classroom and lab. It was during these times that I felt most inspired to work harder and become the kind of Physicist they were.

The local chapter continues to strive to be a place that provides dissemination of information. From the 4 local chapter meetings and the Spring Symposium we have had the good fortune to have excellent speakers share their knowledge with our members. The Fall Chapter meeting – Fox Chase Cancer Center (November 20, 2007) was an opportunity for two of our younger members to present their present research. This was followed by the Winter Chapter meeting in which Kate Spillane presented information on the revised and retooled Graduate program in Medical Physics that is being started at the University of Pennsylvania. The second talk that evening Teh Lin presented her research on High Dose rate IMRT. As the year comes to a close I was very proud of our chapter and the involvement that younger members are taking in the chapter. I cannot think of a better way to close out a year than to future leaders of our chapter present their research and interest.

During the Winter meeting the new officers of the Chapter were introduced. It was my great pleasure and honor to introduce them. As I introduced each officer and thought of their different contributions to the field and the local chapter over the years I knew the

chapter was in great hands. Our president for next year will be John Sweet Ph.D. of the Drexel University. John has served in many roles with the local chapter and continues to help steer the local chapter into the future. Shawn McNeilley of St. Mary's Hospital has been elected to the position of President Elect for 2008 – he will be the President in 2009. I have had the great fortune of knowing Shawn for approximately 8 years. He is great asset to our Chapter and has served the chapter over the past several years. Lili Chen of Fox Chase Cancer Center will be the Treasurer next year. I am really proud of Lili, she seemed a little nervous about he position but has stepped out of her comfort zone in order to serve the local members.

This year was a year of learning and gaining understanding about he true commitment many members have to the local chapter. All of the activities and coordinating of events could not have been done with out an enormous effort of a few really dedicated members. Paula Salanitro (Treasurer) and Mary Moore (Board Representative) worked tirelessly and mostly anonymously to make every activity of the chapter go smoothly. Every task they took on was done with excellence and never left anyone worrying if it would be completed. Both Mary and Paula have been serving the chapter for a number of years and have dedicated themselves to the services of this Chapter. I know Lili (Treasurer) and Bob (Board representative) will have strong allies and mentors to assist them in their new roles.

I remember while an undergraduate I played on a Championship club soccer team. At the time – I am old now – I was the leading scorer on the team and a lot of people would comment how good I was. But what they did not realize, and I always tried to explain, that there were some really – really – important people that created the opportunities for me to finish a play off. At the time there was a good friend of mine – who actually was a better soccer player than me, and my coach who knew the game at level I could not totally understand. And though many times they did extraordinary things to put us in the position to win many times they did not receive the rightful credit. This past year I have had 2 people on my team that have truly given me the opportunity to succeed. Lu Wang of Fox Chase Cancer Center (Secretary) has been the right hand person for me. She has worked extremely hard to make sure things are organized and running smoothly. There have been many times I have dropped the ball and she picked it up and ran it for the team. She has great creativity and really wants our Chapter to be known for its excellence. I could not have been successful this year without her by my side leading the charge. The second person is Charlie Ma of Fox Chase Cancer Center. Charlie has been a rock and a steady foundation. He gave encouraging words – especially early on – when I was thinking there was no path to success in the role of President. Charlie always seemed to have a smile on his face and see the positive side of tough situations. I knew every meeting I went to he would be there, and if I had a question he would welcome it. He was a coach behind the scenes that would not let me fail.

As I sat at Jefferson this month listening to the speakers and gazing around at the membership I recalled the first local chapter meeting I ever attended. It was at Jefferson in the Bodine Cancer Center 15 years ago. I met Saiful Hug, Suntha, Indra Das, Peter Block, Bob Stanton, and Jim Galvin for the first time. Of course as a new Medical

Physics Graduate student in the area I knew none of them. But as time has continued to move forward I have been fortunate to see a small glimpse of the impact each of them have made on the future of our chapter. As the night wound down I realized the great legacy that has been left for the next generation. Over the past several years I have seen Charlie Ma, Indra Das, Jay Rieff, and Bob Price plant the seeds for the future generations of this Chapter to water and grow into maturity. My hope and my prayer is that each year the members of this Chapter will keep planting seeds, watering the seeds, and building a legacy of excellence for the next generation. This is the second oldest Chapter in the United States, and one of the most active. A large number of speakers that have come to speak at our Chapter events have commented on the great comradery in our Chapter. It is a testimony to the character of the individuals and the unity of the Chapter that has made this Chapter stand out amongst many other great Chapters of this society.

I want to close this season with a challenge to each member of the Chapter and to larger programs in the Chapter. I would like to challenge each member to serve the Chapter in some regard over the next two years. Even if you do not feel adequate – or like all of us – don't think you have the time. Ask one of the officers of the Chapter what task you could do to assist the Chapter and members. Our Chapter will only be as strong as our individual parts (Cliché of the Day). The second challenge I would like to put out there is to Fox Chase Cancer Center, Jefferson University, and University of Pennsylvania. Begin this year to challenge each other in pushing the future of Medical Physics in your research, teaching, and clinical applications. Use the local Chapter as a place where ideas from each group are brought, discussed, and developed for the betterment of this field. As a graduate Student at the University of Tennessee and Researcher at Oak Ridge National Laboratories we had great competition from other research groups. We strived to produce excellent work and present it, and other groups did the same. It forced the students to work hard and want to achieve, and it forced groups to come together and lift each other up. The last two meetings this year really gave me a glimpse of how much these 3 institutions have to offer, and how much the whole Chapter can change and advance our field.

Members Vault:



Christopher Hand, Ph.D.

Chris started his career, after graduating from Holy Family College, Philadelphia, PA in 1985, working at a small Bio-tech firm in Malvern, PA making blood bank products. After seeing my life flash in front of me, Chris changed positions to Hahnemann University conducting research in the field of spinal cord injury & brain tumors' in the Department of Neurosurgery. After almost 10 years of neurological research, Chris changed departments to Radiation Oncology continuing the brain tumor research with radio-labeled monoclonal antibodies for the treatment of glioblastoma tumors. During his tenure in research Chris published multiple articles, had multiple poster & podium presentations. However, the use of radiation for the treatment of cancer peaked his curiosity & Chris began his graduate studies in Radiological Sciences. Chris completed his Doctorial studies from MCP-Hahnemann University. Seeking the advise of colleagues & wanting to use his degree for clinical purposes, Chris accepted a Residency position at the University of Chicago in Therapeutic Medical Physics. During his residency Chris continued to publish, including a textbook chapter in Radiation Biology. Upon completing his residency, Chris accepted a clinical Medical Physics position at Abington Memorial Hospital & continues in this capacity today. In addition to his clinical responsibilities, Chris also holds an adjunct faculty position in the Schools of Radiology & Radiation Therapy at Gwynedd Mercy College. In 2007, Chris retired from the United States Naval Reserves after almost 21 years of service. During his tenure in the US Navy, Chris spent over 8 years with the Marines providing medical support to 3 Marine units. At the end of his Navy career, he worked for the Office of Naval Research working of chemical, biological & radiological defense projects.

Working Vault:

Medical Physicist Needed: Christiana Hospital

Contact:

Larry Simpson Ph.D.

Director of Medical Physics

Graham Cancer Ctr. Radiation Oncology

Christiana Care Hospital

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Newark , DE 19713

302-545-3870

Lsimpson@ChristianaCare.org

Looking for Job – Summer of 2008

Thomas R. Stanley

I am currently in my second year at the State University of New York at Buffalo working primarily at The Roswell Park Cancer Center. Learning in a clinical setting has been a serious commitment but quite a joy, as well. So, thank you.

Since I will be graduating with a master's degree in medical physics in the summer of '08, I was wondering if you anticipate an opening for a junior medical physicist at Abington Memorial Hospital. If you do not, perhaps you might know of another hospital in the region that anticipates such an opening. Any information you might have in this regard would be greatly appreciated.

Department of Radiation Medicine,

Roswell Park Cancer Institute

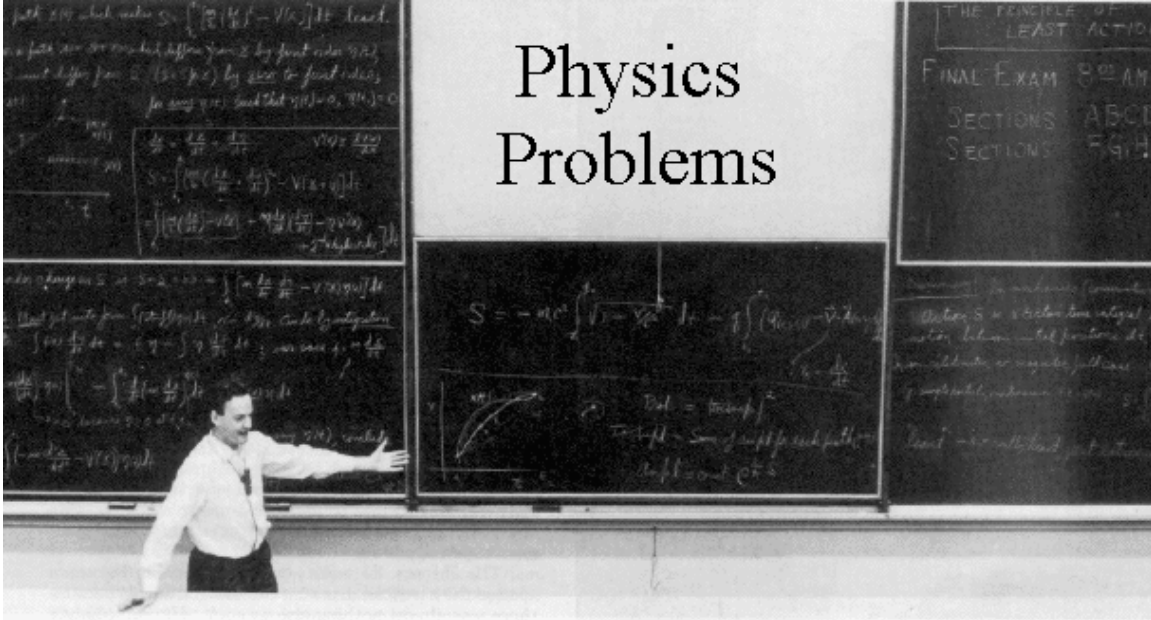
Thomas.Stanley@RoswellPark.org

TStanley@Buffalo.edu

The Puzzle Vault:

From: <http://www.physics.harvard.edu/academics/undergrad/probweek/>

Math Games

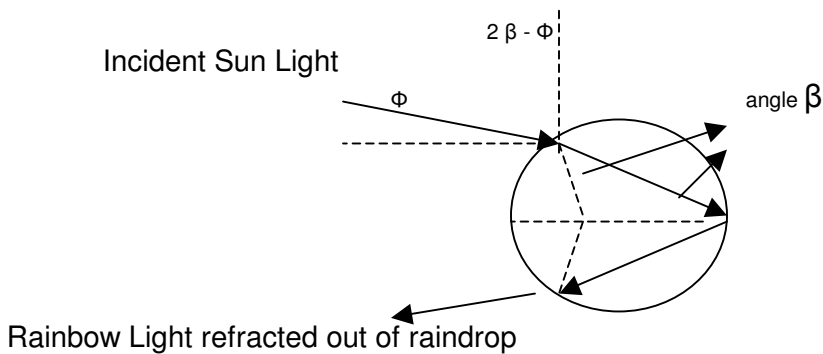


And so there you have it – another simple solution to all the problems of the world.

Rainbows

Assuming that the index of refraction of water is $4/3$ and that raindrops are spherical, show that the location of a rainbow is approximately 42° above the line from the sun to you. If you see a double rainbow, what is the angle of the second one? Even triple rainbows are possible, although they are difficult to see; where is the third one?

Hints: Use Snells Law: $n_1 \sin\theta_1 = n_2 \sin\theta_2$



For this situation Snells Law gives: $\sin(2\beta - \phi) = \frac{4}{3} \sin \beta$

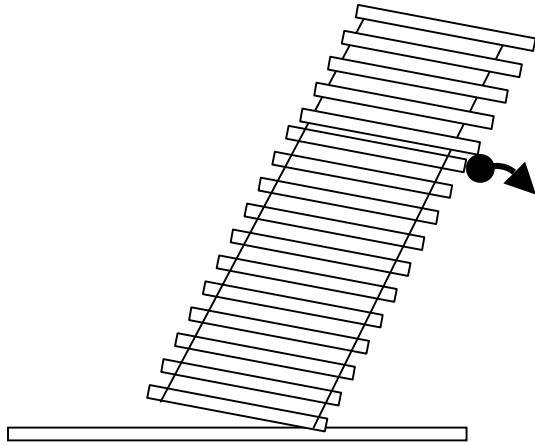
Create a plot of ϕ versus β

Determine β_{\max} then plug that back in to solve for ϕ_{\max} .

Falling chimney

A chimney initially stands upright. It is given a tiny kick, and it topples over. At what point along its length is it most likely to break?

In doing this problem, work with the following two-dimensional simplified model of a chimney. Assume that the chimney consists of boards stacked on top of each other, and that each board is attached to the two adjacent ones with tiny rods at each end, as shown below. The goal is to determine which rod in the chimney has the maximum tension. (Work in the approximation where the width of the chimney is very small compared to the height.)



Hint: Moment of Inertia of pivot point on ground $I = mL^3/3$, and the torque due to gravity is $\tau = mg(L/2) \sin\theta$ where l is the height of the chimney, m is mass, and g is gravity.

You need to think of the forces on the rods holding the chimney together. As well, split the chimney height in $2h_1$ and $L-h_1$.

The force on the chimney can be broken into 2 components – T_1 (horizontal) and T_2 (vertical).

Remember use the forces and torques on each piece of the chimney and rods.