

Universal Times

The Summer Science Program

October 2008

INSIDE

The Stars of SSP 2008	2
SSP '07 -> College	3
SSP Belongs to You	3
Donors and Volunteers	4-5
Donation Form	7
2008 Guest Speakers	7
Letter From the Chair	Back page

It was the largest gathering ever of the SSP extended family.

On July 18th over 80 alumni and former faculty plus 40 guests gathered for a Benefit Fundraising Reception

and Dinner. Among the program highlights: Steve Cotler '60 premiered a video, "50 Years: Why SSP Thrives", Dr. Ed Krupp '61 presented "Thrilling Wonder Stories of Space and Time", and 24 individuals were honored for manifold contribu-

tions to SSP. In a surprise addition to the program, Sarah Wyss '08 and Arun Saigal '08 came over from Besant Hill School to remind us in person that SSP still changes young lives every summer. Henry Lichstein '60, Susan Jerian '79, and Franklin Antonio '69 described the \$2 million Scholarship Endowment Campaign, and appealed for others to join. Mr. Lichstein reminded attendees "you don't know what you will get until you give."



The next day, over 165 alumni and faculty returned to Thacher School, accompanied by 100 family members and other guests, and the Ojai campus students and staff. A full day of fun was had, including a keynote talk

by James Randi on "Nonsense In the Name of Science", and a panel discussion on "How SSP Changed My Life".

(Continued on page 2)

ACADEMIC DIRECTOR REPORTS

Ojai Campus by Dr. Tracy Furutani '79

I am pleased to report that all of our 36 students completed their near-Earth asteroid orbital determinations, using a program they each wrote in the VPython language. All students also used the f and g series calculations to check their asteroid's position and velocity vectors, generated an ephemeris for a fourth observation of their asteroid from their orbital elements, and compared the calculated position to the measured position. Further, ten students performed the light travel-time correction, eight students corrected for stellar aberration, and three students attempted to calculate the orbital elements using the alternate Gaussian method.

For the first time in SSP history, students also wrote the Least Squares Plate Reduction (LSPR) program to convert measured Cartesian X,Y coor-

(Continued on page 6)

Socorro Campus by Dr. Kevin Krisciunas

The 6th SSP at New Mexico Tech met our high expectations. Afterward, a student wrote in a letter to me that he now sees the key to a happy life is not money, but finding something that you are truly interested in doing.

I am very glad that we had three lecturers this summer. Dr. William Andersen took care of physics lectures. Dr. Agnes Kim was the official Python teacher and explained the gory details of the Gaussian method of determining orbital elements. I taught classes on astronomy, some statistics, and integral calculus.

Students arrived with a range of academic backgrounds, and we encouraged them to help one another. Several took the lead to organize problems sessions with their peers. We assigned quite a lot of homework. To my surprise, most

(Continued on page 6)

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- Email your news: <u>sspalum@ssp.org</u>

2008ERS SAY

"For once, a peer group where you can unlock your inner nerd and be welcomed with open arms."

-Avanti Shrikumar

"The social experience at SSP is unique. I've made friends that have changed my outlook on life and academics, friends who motivate me to do better." –Jacklyn Nagle

"SSP is amazing people, amazing memories, power naps, philosophizing in the telescope dome at 3 a.m. *SSP is unforgettable."*

–Maria Altyeva

"More than just a

summer camp - it becomes a community, and you never forget the **people you meet here."**

–Jeremy Steeger

THE STARS OF SSP 2008



Ojai students and faculty



Socorro students and faculty

50th SSP Celebration

(Continued from page 1)

Kim Thomas '70 wrote a typical reaction: "It was a wonderful reunion, and all my classmates who attended have been writing back and forth to say how much they enjoyed it. In fact, it's still sort of going on for us."

Her class (1970) won the prize for most in attendance – 17! – followed by 10 each from 1974 and 1975.

But for most alumni, seeing a few of their own classmates was just icing on the cake. Steven Pier '81 wrote to



After the Reunion, current and recent TAs gathered to swap war stories

emphasize "the rewards of meeting SSP alumni and faculty from all years and both campuses".

COLLEGE 🖛 SSP '07

Brown Univ.	Kate Alexander
Caltech (4)	Tom Harris, Mary Beth Yu, Jeffrey Lin, Jamie Tayar
Claremont-McKenna	Xiaotong Li
Cornell Univ. (2)	Daniel Kim, Elizabeth Rust
Dartmouth College (2)	Greg Challener, Rebecca Rapf
Duke Univ.	Lina Colucci
Harvard College (4)	Adam Arthurs, Matthew Young '06, Senan Ebrahim, Sa- sha Rohret
Harvey Mudd (2)	Susanna Todaro, Paul Hobbs
Illinois Inst. of Technology	Eda Gjergo
Middle East Technical Univ.	Pelin Dogan
MIT (7)	Isaac Bleicher, Sarah Cheng, Daniel Dahan, Nathaniel Fox, Rebecca Jensen-Clem, Jayson Lynch, Samuel Markson
Northern Arizona Univ.	Natalie Bedard
Olin College of Engineering (2)	Connor Stokes, Michael Murphy
Pomona College	Alan Mitchell
Princeton Univ. (7)	Oyku Akkaya, Gabriel Cadamuro, Hasan Onder Polat, Jason Pollack, Rik Sengupta, Russell Slater, Dan Strass- feld
Rice Univ. (2)	Alexander Dobranich, Colton Willig
Scripps College (2)	Sydney Goings, Ilona Phipps-Morgan
Stanford Univ. (6)	Joyce Chai, Jason Gonzalez, Elliott Jin, Steven Bartz '06, Diana Lee, Frank Wang
UC Berkeley (4)	Liam King, Freddy Dopfel, Dylan Scott, Aaron Wong
UC Santa Barbara	Aleksey Generozov
Univ. of British Columbia	Magnus Haw
Univ. of Chicago	Alan Salkanovic
Univ. of New Mexico (2)	Ginny Cochran, Morris Huang
Univ. of Pennsylvania (2)	Cynthia Ip, Jerry Yeh
Vanderbilt Univ.	Michael Akenhead
Williams College	Samuel Grondahl
Yale Univ. (6)	Natalie Milioutina '06, Alexander Beltes, Benjamine Liu,

Page 3



The youthful Class of '74 returns to Ojai for the 50th



Homework time in Socorro



Socorro faculty supporting one another ... literally



Dr. Fu in his sixth year as AD



Collaborating in Ojai

SSP BELONGS TO YOU

Last June the SSP Board of Trustees voted unanimously to have future Trustees elected by alumni and former faculty (aka "members"), starting next summer.

The process will start next spring with a Nominating Committee chaired by Past President Chuck Holland '60. The election will be held online. We will keep you informed via the *UT Email Edition*, so if SSP does not have your email address, send it to sspalum@ssp.org. If you are interested in serving SSP as a volunteer, this would be a good opportunity to tell us what you have in mind.

Daksha Rajagopalan, Daniel Steinbrook, Deepa Chari

SSP was already the only summer enrichment program operated and funded by its own alumni; now we can add "owned" to the list!

OJAI ACADEMIC DIRECTOR'S REPORT

(Continued from page 1)

dinates into celestial coordinates. To that end, statistics and sophisticated programming techniques had to be taught early and often by our Associate Academic Director, Prof. Martin Mason.

Changing the observational target from main belt to near-Earth asteroids (NEAs) required digital observations (they are too dim for our film telescope). Unfortunately the Laplacian OD method failed for some of the NEAs. It works best when we are observing the asteroids close to opposition, when the curvature in their path is greatest.

Teams spent the first two weeks taking and measuring film images of a variable star. Again this year the students had a low success rate in manually guiding the telescope. Nevertheless, we believe that the film and measuring engine component of the program provides a valuable learning experience for the students, for learning the value of careful measurement and patience.

I have nothing but the highest regard for everyone on the faculty. They exceeded expectations in handling new equipment and the new curriculum, as well as working with each other and the students. They all took the attitude that if something needed to be done, they would do it, regardless of job description. In addition to Prof. Mason, I commend our new Site Director, Barbara Martinez, and our four excellent Teaching Assistants: Gabe Billings '03, Liliana Lopez, Rico Chiu '04, and Laura Hooks.

As always, guest speakers and field trips spiced up the schedule. Popular speakers included Prof. Tyrone Hayes of UC Berkeley and Prof. Paul Pottinger from Univ. of Washington. Our half-day visit to Caltech was so popular that I recommend a full day there next summer. On a different day we visited both JPL (thanks to Dr. Stuart Stephens and other SSPers there) and Griffith Observatory (thanks to Dr. Ed Krupp). Other field trips included Santa Barbara Natural History Museum, Kavli Institute, Los Cumbres Observatory, and area beaches. Of course, we will all long remember the 50th Celebration at Thacher.

In between trips, TAs took turns organizing campus events, especially Ultimate Frisbee, tennis, and volleyball. Rico organized a Caltech-style scavenger hunt "stack". Laura set up a "Quidditch" game. Fortunately we avoided any serious injuries.

We found these students to be motivated and cooperative. Since they are teenagers, we had the usual quota of pranks, tardiness, collaboration drifting too close to plagiarism, and late night noise. When combined with the challenge of NEA observation and everything else going on, we had enough to keep us all busy.

SOCORRO ACADEMIC DIRECTOR'S REPORT

(Continued from page 1)

of the students had relatively little trouble coding up their OD. Most amazingly, one of the students (Jeremy Steeger) reverseengineered his OD code to help **debug Dr. Kim's!**

Extracurricular activities are truly necessary during SSP. Twelve guest speakers exposed us to topics such as life in caves, chimpanzees, radioactivity, and espionage. I particularly enjoyed field trips to the Atomic Museum and the Natural History Museum. The full day to Apache Point Observatory and White Sands was exhausting, but it was great for the students to see a working observatory, and a scene as remarkable as the dunes of White Sands. Back on campus, many students participated eagerly in weekly swing dancing. One of my favorite special events was dinner at the

President's House as guests of Tech President Dr. Daniel Lopez.

Thanks are due to Site Director Leslie Clark, with whom I spent many hours discussing student issues and administration issues. I am so glad we had Anna Heinz **'98, Peter Combs '03, and Re**becca Mickol as TA's. They are just excellent.

One of the biggest issues to consider for SSP is tradition vs. innovation. We dispensed with the use of film, the darkroom, and the measuring engine. Yes, this is regarded fondly by alumni as a right of passage, but I am not persuaded of its value today. Because the weather predictably degrades in New Mexico over the course of SSP, it is critical to get good observations early in the program.

At the observatory, Dr. Dan

Klinglesmith and Tech astronomy grad student Jason Speights were of great help to us. Before our arrival Dan tuned up the pointing model of our Takahashi refractor just right, and it worked well all summer, despite at least one student smacking his head on the counterweight.

As a parallax experiment, students in both campuses took simultaneous observations of asteroid 8567, leading to a distance of 0.316 A.U., which matches the public JPL data quite well. We were lucky to have a reasonably bright supernova to follow as another side project. Many students asked me, ``I haven't seen the supernova yet. Is there a signup sheet?" They were willing to observe from 2:30 AM till dawn. One way or another these observations will be published, with several students cited as coinvestigators!

Universal Times

DONATION FORM						
Next summer, you can help inspire 72 gifted teenagers to reach their po- tential. Return this form with your check, or donate online using a credit card at www.ssp.org/donate. Thank you!						
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INSPIRING GUEST SPEAKERS

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Dr. Michelle Thaller, Caltech / Jet Propulsion	Dr. Elizabeth Simmons '80, Michigan State
Lab "Cool Cosmos"	Univ "Particle Physics in the LHC Era"
Dr. Graciela Matrajt, Univ. of Washington -	Dr. R. Sekhar Chivukula '78, Michigan State
"Mission: Stardust"	Univ "Gravity from Newton to Einstein"
Dr. Tyrone Hayes, UC Berkeley - "From Silent Spring to Silent Night"	Dr. Susan Bilek, New Mexico Tech - "Large Earthquakes and Tsunami: The Global Reach of 2004 Sumatra"
Dr. Michael Brown, Caltech - "How I Killed Pluto and Why it Had it Coming"	Dr. Harold F. Levison, Southwest Research Institute - "What Are Planets and How Do They Form?"
Dr. R. Michael Rich '74, UCLA -	Dr. Larry Sverdrup, Ophthonix, Inc
"A New Spin on Our Galactic Bulge"	"Mad? Science!"
Dr. Larry Sverdrup,	Dr. Penelope Boston, New Mexico Tech -
Ophthonix, Inc	"Caves: Exploring Life Underground
"Mad? Science!"	from Earth to Mars and Beyond"
Mr. James Randi,	Dr. Sherry Nelson, University of New Mexico -
James Randi Educational Foundation -	"Sivapithecus: Reconstructing the Life
"Nonsense in the Name of Science"	of a Fossil Ape"
Dr. Warren Rogers '76, Westmont College -	E. Bruce Held,
"Nuclear Astrophysics and the	Sandia National Lab
Origin of the Elements"	"Espionage in New Mexico"
Dr. Massimiliano Bonamente, Univ. of Alabama at Huntsville - "The Expanding Universe: Discovery and Measurement of the Hubble Constant"	Dr. Kimberly Thomas, Los Alamos National Lab - "Things Nuclear in Our Lives"
Dr. Paul Pottinger, Univ. of Washington Medical	Dr. Nicholas Suntzeff,
Center - "Battling the Superbugs:	Texas A&M Univ
Antimicrobial Stewardship & Beyond!"	"The Ultimate Fate of the Universe"
Steve Cotler '60, Summer Science Program -	Dr. Scott C. Zeman, New Mexico Tech -
Closing Address	Closing Address

PARENTS SAY

"Our son's

SSP summer was exhilarating, rewarding, challenging, exhausting, and, ultimately, wonderful. OK, so he didn't enjoy the program; he simply **loved it."**

> –Lisa Shapiro, mother of David Steinberg

"SSP was probably the single most enriching experience of our daughter's life. Being immersed in a college setting, with peers of similar interests and teachers with high expectations, gave her (and us) the confidence that she will thrive in college. One caveat: Beware post-SSP depression!"

–Heather and Henry Robaszewski, parents of Joanna Robaszewski



The Summer Science Program Business Office: 108 Whiteberry Dr Cary, NC 27519

2008ERS SAY

"What's the best

thing about SSP, the most surprising, the most life-changing? All the same answer: the people, the **people, the people."**

-Christine Chang

"I can only hope col-

lege will be half as fun--both in academics and social life--**as SSP."**

–Ryan Handoko

LETTER FROM THE CHAIR

By Dr. Elizabeth Simmons '80

As we start into year 51 of the Summer Science Program, it is truly wonderful to see how the program is flourishing. Applications from talented students continue to pour in each winter. We are able to fully enroll two campuses with students whose drive and accomplishments are simply amazing. Student evaluations of their experiences in Socorro and Ojai are eloquent about the positive effects on their self-knowledge, technical abilities, and future plans. And as those students become alumni, they continue to maintain contact with the program, returning to work as TAs, attending reunions, or serving on the committees that keep the program functioning throughout the year.

This fall your Trustees and Working Committees are focusing on two major topics: curriculum and diversity. We continue to update the curriculum to take advantage of new technologies that give students an academic experience consonant with current astronomical practice. We have transitioned to digital imaging and the study of nearearth asteroids, with an option for the Academic Directors to continue some ancillary use of film. Our curriculum committee is evaluating the results for the first summer in this new mode and will recommend further improvements. Our second major project focuses on outreach and scholarship fundraising, to encourage more students from groups under-represented in science to apply and attend. We want SSP to be a leader in bringing gender, racial/ethnic, and socioeconomic diversity to science.

I attended SSP way back in 1980. This past June I had the privilege, as an alumna and trustee, of spending several days at the Socorro campus to give a guest lecture, spend time with students, and meet the staff. Even after 28 years, on a different campus in a different state with unfamiliar faces all around, I immediately felt that I had come "home" again. SSP has a real magic.

Please consider sending a donation to help the magic continue, and visiting campus next July. Here's to the next 50 years of SSP!

Dr. Simmons is a Professor of Physics at Michigan State Univ. and Dean of its Lyman Briggs College