



## Professor John Schwarz Nominated for Physics Prize

### Fundamental Physics Prize Organization

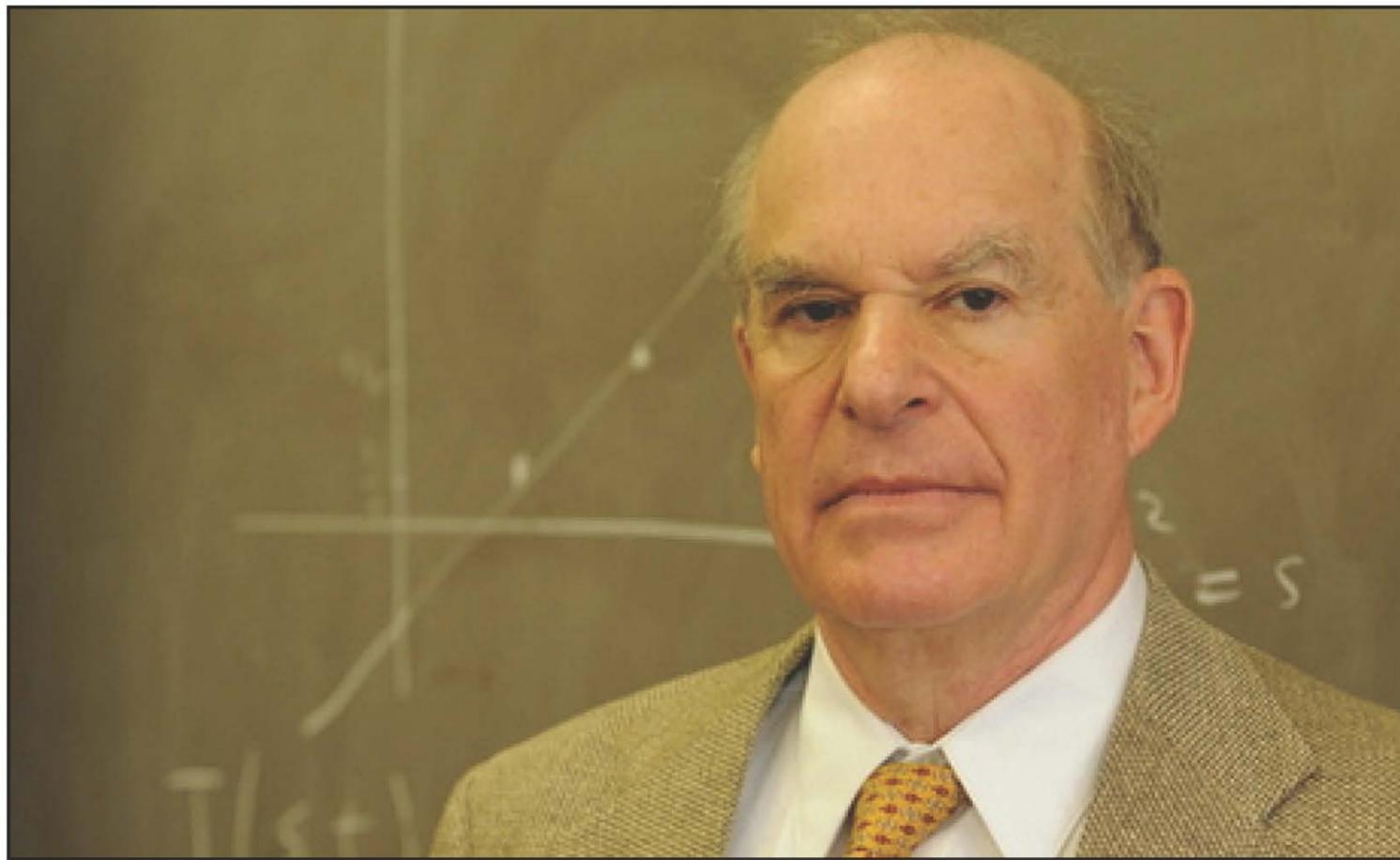
The winner of the 2014 \$3 million Fundamental Physics Prize and six winners of the 2014 \$3 million Breakthrough Prizes in Life Sciences will be announced on December 12

On November 5, The Fundamental Physics Prize Foundation announced from New York the 2014 winners of the Physics Frontiers Prizes and New Horizons in Physics Prizes. The prizes recognize transformative achievements in the field of fundamental physics and aim to provide recipients with more freedom and opportunity to pursue future accomplishments.

The laureates of the 2014 Physics Frontiers Prize are:

Joseph Polchinski, KITP/ University of California, Santa Barbara, for his contributions in many areas of quantum field theory and string theory. His discovery of D-branes has given new insights into string theory and quantum gravity, with consequences including the AdS/CFT correspondence.

Michael B. Green, University of Cambridge, and **John H. Schwarz**, California Institute of Technology, for opening new perspectives on quantum gravity and the unification of forces.



Andrew Strominger and Cumrun Vafa, Harvard University, for numerous deep and groundbreaking contributions to quantum field theory, quantum gravity, string theory and geometry. Their joint statistical derivation of the Bekenstein-Hawking area-entropy relation unified the laws of thermodynamics with the laws of black hole dynamics and revealed the holographic nature of quantum spacetime.

Laureates of the 2014 Frontiers Prize now become nominees for the 2014 Fundamental Physics Prize. Those who do not win it will each receive

\$300,000 and will automatically be re-nominated for the next 5 years.

The laureates of 2014 New Horizons in Physics Prize are:

Freddy Cachazo, Perimeter Institute, for uncovering numerous structures underlying scattering amplitudes in gauge theories and gravity.

Shiraz Naval Minwalla, Tata Institute of Fundamental Research, for his pioneering contributions to the study of string theory and quantum field theory; and in particular his work on the connection between the equations of fluid dynamics and Albert

Einstein's equations of general relativity.

Vyacheslav Rychkov, CERN/ Pierre-and-Marie-Curie University, for developing new techniques in conformal field theory, reviving the conformal bootstrap program for constraining the spectrum of operators and the structure constants in 3D and 4D CFT's.

The New Horizons Prize is awarded to up to three promising researchers, each of whom will receive \$100,000.

The winner of the 2014 Fundamental Physics Prize will be announced on December 12, 2013

in San Francisco, along with the winners of the 2014 Breakthrough Prize in Life Sciences.

The Fundamental Physics Prize Foundation is a not-for-profit corporation established by the Milner Foundation and is dedicated to advancing our knowledge of the Universe at the deepest level by awarding annual prizes for scientific breakthroughs, as well as communicating the excitement of fundamental physics to the public.

According to the Foundation's rules, laureates of all prizes are chosen by a Selection Committee, which is comprised of prior recipients of the Fundamental Physics Prize.

-www.theory.caltech.edu

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## News briefs from around the globe

*Helping readers burst out of the Caltech bubble*

### Need to know

< **100** words about the world this week – topics sorted from good to bad

by *The Tech Eds*

- UN assists Philippines** **\$25** million in emergency funds released to provide immediate aid [BBC]
- Kids attend unique camp** **15** kids with congenital insensitivity to pain attended a special camp [ABC]
- China eases child policy** **1**-child policy relaxed to allow 2nd child if one parent is an only child [CNN]
- Army scraps incinerators** **\$1.3** billion set aside for chemical weapons incinerators' demolition [ABC]
- Germany sees protests** **100s** march in torch-lit protest planned by far-right against refugees [ABC]
- Dengue fever hits Florida** **25,000** deaths/year caused by dengue fever, which broke out in Fl. [BBC]
- Meningitis B spreads** **7** cases have been reported at Princeton University since March 2013 [CNN]

## Food with Mannion!

*Do you like eating food?*

*How about free food at nice restaurants?*

*Ever want to tell the world exactly what you think of said food?*

*The Tech will be beginning a new column to chronicle the foodie experiences of new writers every other week... The Catch: They'll be going head-to-head with Tom Mannion who will be reviewing the same restaurant. If you have ever thought you were more of a gourmand than our resident master chef, now's your chance to prove it!*

*Email us for a spot on the list at [tech@caltech.edu](mailto:tech@caltech.edu)*

### The California Tech

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The Tech is published weekly except during vacation and examination periods by the Associated Students of the California Institute of Technology, Inc. The opinions expressed herein are strictly those of the authors and advertisers.

Letters and submissions are welcome; e-mail submissions to [tech@caltech.edu](mailto:tech@caltech.edu) as plain-text attachments, including the author's name, by Friday of the week before publication. The Tech does accept anonymous contributions under special circumstances. The editors reserve the right to edit and abridge all submissions for any reason. All written work remains property of its author.

The advertising deadline is 5 PM Friday; all advertising should be submitted electronically or as camera-ready art, but The Tech can also do simple typesetting and arrangement. All advertising inquiries should be directed to the business manager at [tech@caltech.edu](mailto:tech@caltech.edu). For subscription information, please send mail to "Subscriptions."

## Write articles for the Tech

get paid up to \$30

## ASCIT Minutes

ASCIT Board of Directors Meeting

Minutes for November 13, 2013. Taken by Catherine Jamshidi

Officers Present: Zach Rivkin, Connor Coley, Malvika Verma, Connie Hsueh, Monica Enlow, Catherine Jamshidi

Guests: Connor Rosen

Call to Order: 5:15pm

### President's Report (Zach):

- Jetson and I are working with Millikan Library staff to design the 9th floor; although all the books have been removed, the 9th floor will remain a student space.
- Come out and get donuts this Wednesday night at midnight on the Olive Walk!
- Reminder: ASCIT has a permanent suggestion box hosted at <http://donut.caltech.edu/suggestion.php>

### Officer's Reports:

#### • V.P. of Academic Affairs (ARC Chair: Malvika):

- o Student-Faculty lunch is this Thursday in Lloyd. Sign up if you have not already.
- o Math 2A update: New grading policy is 50% homework, 10% midterm, 30% final, and 10% max{midterm, final}. We want everyone to know!
- o If you have positive feedback for any of your professors, feel free to put them in the ARC Concerns box. We will pass on any compliments to professors. Of course, continue to use it to submit any concerns, but also talk to your ombuds.
- o If you have any examples of vague/unclear collaboration policies, please tell your ARC rep.
- o Meet with your option mentors/mentees!

#### • V.P. of Non-Academic Affairs (IHC Chair: Connor):

- o IMSS will be doing a survey of the wireless internet in each of the houses towards the end of this term. Over winter break they will realize how terrible it is and come up with a plan to improve WiFi
- o Your Freshmen Admissions Committee representatives are working to increase student involvement in admissions; contact Jesse Salomon if you have questions.
- o Invite your professors to your house dinner! It's a great way to get to know them in a non-academic context AND you can be reimbursed for it.

#### • Director of Operations (Connie):

- o Club funding is ongoing
- o Club lockers will be assigned
- o SAC room reservations through Donut are now limited to current students

#### • Treasurer (Monica):

- o Club Funding decisions have not been made yet.

#### • Social Director (Michelle):

- o The Ice House comedy show was last Friday. It went really well. Event will probably happen again in the near future.
- o Midnight Donuts is this Wednesday night at midnight.
- o Page Interhouse is this Saturday (11/23) night. The theme is Daft Punk/Pacific Rim.
- o The Wallpaper. concert will be on December 6th.

#### • Secretary (Cat):

- o Still going through survey responses with Connor Rosen. We're planning on sending out a short follow-up survey to identify trends in the student experience.
- o Will be meeting with Ray Gonzalez about survey generation and analysis before creating this follow-up survey.
- o The ASCIT BoD retreat is next weekend.

If anyone has any questions or concerns about a section of the minutes please email the appropriate officer. We are happy to answer any questions.

Meeting Adjourned: 5:58 pm

## Caltech Y Column: Look out for new events

**PHOEBE ANN LAURA SANTOSO**  
Contributing Writers

Hi everyone! This is the Caltech Y Column, designed to inform you about the Y and the opportunities we provide for you to inspire your passions, whether by participating in our programs or leading your own!

### 1. Ice Cream Competition!

The Caltech Y is hosting a Fosselman's Ice Cream Competition between the houses, sponsored by Tom Mannion! The houses will be competing to create the best flavor of ice cream, and the winner will get their ice cream flavor featured at CDS dinners in addition to \$2000 for the house retreat fund. The other semifinalist will win \$1000, and there will be additional prizes from the Caltech Y.

For the competition, each house (through their ExComm) will

submit one recipe to the Caltech Y by November 17. There will be two semifinal competitions taking place at the Caltech Y house (505 S. Wilson Ave); the first is between the North Houses (Avery, Lloyd, Page, and Ruddock) on Sunday, December 1st, and the second is between the South Houses (Blacker, Dabney, Fleming, and Ricketts) on Wednesday, December 4th. Winners will be decided by popular vote but the finer points are still being worked out.

2. Social Activism Speaker Series presents: Boots Riley Social Activist and Front Man of the Coup Monday | November 25th | 7:30 pm | Beckman Institute Auditorium

For decades, Boots Riley, musician, vocalist, writer, and public speaker, has been an integral part of the progressive struggle for radical change through culture. At a young age Boots served on the central committee for the

Progressive Labor Party. He was the President of InCAR (International Committee Against Racism), and organized to build California's Anti-Racist Farm Workers' Union.

Boots has appeared on Fox News's Hannity and Colmes, PBS's Democracy Now!, and ABC's Politically Incorrect with Bill Maher. He has been featured addressing a variety of subjects from music to grassroots organizing, to US imperialism and racism, recently winning awards from the AFL-CIO for his participation with the Tell Us the Truth Tour. Riley continues to effect social change through his artistic and political work. Contact caltechy@caltech.edu for more information.

### 3. Vasquez Rocks Day Hike

Saturday | November 23rd | 8:00 am to 3:00 pm roughly

The Caltech Y Outdoors will lead a hike to Vasquez Rocks in Northern LA county. Named for one of California's most notorious

bandits, who eluded capture hiding in the rocks, it has also been host to a wide variety of film and television shoots.

This colorful history, in addition to spectacular scenery, should make for a great outing in the greater LA area.

Email chandmer@caltech.edu if you have questions.

### 4. Caltech Y Life Skills Series: Nutrition Life Skills

Thursday | November 21st | 5:30 pm | RSVP for Location

Lisa Gilmore, a registered dietitian, will be talking to us about good nutritional practices. Snacks will be provided. If you're interested, please RSVP at <http://goo.gl/9JtvRF>. The Caltech Y Life Skills Series strives to give students the skills necessary to thrive in the world outside the ivory tower.

### 5. Rise Tutoring Program

Mon.-Thurs. | 4-6pm | Winnett, 2nd Floor

The Caltech Y Rise Program is currently accepting new tutors. The Rise Program is an afterschool math and science-focused tutoring program that serves public school students between grades 8 and 12.

The tutoring takes place on the Caltech campus Monday-Thursday from 4pm-6pm. For more information about the program and to apply please visit our website at:

[http://caltechy.org/programs\\_services/tutoring/](http://caltechy.org/programs_services/tutoring/)

If you have any questions at all, feel free to contact the Caltech Y at (626) 395-6163 or [caltechy@caltech.edu](mailto:caltechy@caltech.edu).

Drop by at one of our weekly meetings at the Caltech Y (505 S. Wilson, next to CEFCU), Mondays at noon. Lunch is provided.

For a student's perspective, feel free to contact Phoebe Ann at [phoebe.ann2@gmail.com](mailto:phoebe.ann2@gmail.com) or Laura Santoso at [santoso.laura@gmail.com](mailto:santoso.laura@gmail.com).

*Join us this Thursday, November 21st, 12:00-1:30pm, outside of the Red Door Cafe for our very first Alcohol-related Health-Education-To-Go cart, sponsored by Caltech Health Education. Learn about how to drink responsibly and how to have fun with your peers and friends. We will have free give-aways, informative flyers, games, and virgin drinks. Stop by for some fun and facts! Hope to see you all out there!*

### NO LONGER PASADENA'S BEST KEPT SECRET

**"Best New Restaurant in Pasadena"**  
-Hometown Pasadena

**"Best New Restaurant in the San Gabriel Valley"**  
-Pasadena Star-News

**"One of the Top 12 New Restaurants in LA"**  
-Zagat Guide



### Extended Happy Hour for Caltech in November

All Night Happy Hour on Monday  
Tuesday to Friday - 3pm to 6pm  
Until 7pm with Caltech ID

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## From a Caltech alum: Seven steps to a stronger community

**CHRIS KOLNER**  
Caltech Alumnus

*This is the second of three parts of this editorial, which is being published in consecutive issues of the Tech. It deals with the vanishing trust and respect between undergraduate students and Caltech administrators, and how we might work together to rebuild that link and strengthen the community. The final part will include a link to the full text of the editorial online. Up this week – three more positive changes we might see, addressing some of the biggest threats to the unique Caltech way of life, especially the proposed Bechtel residence.*

3. Admissions should stop censoring the incoming class Facebook group.

When I was a prefresh, Facebook was still relatively new. The “Caltech Class of 2013” group was just a way for new students to interact. It was a place to hang out, not a propaganda mouthpiece for the administration. We made our own group and hooked up on Facebook, no involvement from Caltech necessary. In the subsequent years, that has changed. Membership in the new groups is regulated and requires approval by the Admissions office, and early in the process only specially designated students are permitted to interact with the prefresh. Comments which are deemed to be critical of the administration are deleted, and in one case the person

posting them was banned from the group.

What gives? Is Admissions aware of how bad things are, and trying to cover it up? Do they feel a need to lie to prospective students and hoodwink them into attending Caltech? Pretty much no matter which way you slice it, the Admissions office seeing the need to micromanage the ability of students to interact with prefresh and regulate the message which is allowed to reach prefresh ears looks really, really bad. If they can't trust students to advertise their own school, that is a sign something is deeply wrong with undergraduate life.

4. Dining should remove the new mandatory summer board.

This is a brief detour from the theme of destroyed trust, but it is worth remembering that the Housing Office has been the students' bane in the administration for many years. Commenting on the vileness of college cafeterias is almost passé these days, but it should be noted that the board program is quite unpopular among students. Not including the declining balance used for lunch and weekends, it charges students over \$25 per operating business day (Mon-Fri), an outrageous sum for a few odds and ends in Open Kitchen and a buffet-style dinner which could be purchased (with many more options) at HomeTown Buffet for around \$10. It's a small

wonder that the only reason people are enrolled in the program at all is because it's mandatory if you want to live in the Houses.

The issue of Board is actually far more complicated than this denouncement would suggest – the social institution of House dinners is intricately tied up in the matter – so I am not about to suggest radical changes to the board program. But how on Earth could it be good for students to now compel them to purchase declining balance at \$320 for the summer? If CDS wanted to provide competitive options for summer food, why do they need to force students to buy them? I am all for providing more food options for students, but if CDS can't compete with Lake Avenue restaurants when CDS has the advantage of being 15 minutes closer walking, then something is clearly wrong with the product they are offering. The introduction of mandatory summer board has encouraged more students to flee Caltech housing over the summer, and seems like nothing other than an admission by CDS that they have no interest in offering a quality product at a price that can compete on a free market.

5. The administration should decide and announce that the Bechtel residence will not be an all-frosh dorm.

When the Bechtel Residence was announced (a proposed residence hall for students which would house roughly 250 people

and be funded by a principal donation of \$25 million from the S. D. Bechtel, Jr. foundation) there was considerable uproar among the student body, as one of the leading proposals for the hall was to make an all-froshman dorm which would be mandatory living space for all freshmen. A committee was convened in Spring 2012 which included students and administrators to decide the future of the project. That committee, to date, has not issued a public recommendation for the use of Bechtel Hall, but plans for its construction continue unabated. Inside rumors suggest that the all-frosh dorm idea is alive and well, but no official statements have been made regarding the matter.

I think it is obvious to almost any alumnus that this proposal would mean the death of the 82-year-old House System. If frosh did not participate in Rotation, and did not join and live in a House, they would develop completely apart from the Houses, and their role would be forever diminished. This, I deeply fear, is the secret goal of several administrators and trustees.

But the House System is one of the critical things which define Caltech. Ask any student why they chose Caltech, and they will tell you it was because of the Honor Code and the House System. It fosters strong bonds across the years within houses, and provides an immediately available safety net of friends and mentors within

the student body. Not lightly is it said that your House becomes your family at Tech. At no other school could I imagine being able to say that I may not know everyone in my class, but I know every single person in my House across six of the seven years I have crossed paths with (the classes of 2011-2016). The Houses provide a critical support network for new students, as well as giving them an object lesson in the value of the Honor Code and the Caltech way of life. If frosh are removed from the Houses, the unspeakable damage that would result is too long to fully detail here.

Suffice to say as an alumnus, however, that it would make Caltech forever dead to me, and I know that I am far from alone in that belief.

This is the single thing in the next five years which scares me the most, for it has the greatest potential to destroy everything I find valuable about Caltech. How ironic it would be if a donation that is claimed to be “promoting a robust and unified ‘Caltech experience’” was the seed for removing every edifice which defines that experience. But it is not too late to avoid that future. The senior administrators of Caltech, Vice President for Student Affairs Anneila Sargent chief among them, can decide and announce that this future will not come to pass, and for that many of us concerned students and alumni would rest easier.

## Caltech and MOOCs Part V: Monetization of MOOCs

**CONNOR ROSEN**  
Contributing Writer

*This is the fifth in an ongoing series of articles examining Caltech's involvement with and initial forays into online education. Previous articles have introduced MOOCs, Caltech's partnerships with MOOC providers, the anticipated benefits of MOOCs, the potential pedagogical use of MOOCs at Caltech, and the social reach of MOOCs.*

The final proposed benefit of MOOCs is their potential to bring in revenue for the Institute. There are several potential revenue sources that have been described, the first of which is the direct partnership with Coursera and the potential funding from individual courses.

However, other revenue sources that have been mentioned include return on the equity investment Caltech made in Coursera if online education continues to expand, as well as the potential to increase Caltech's public profile, which will subsequently increase Caltech's ability to fundraise and attract grants.

The difficulty and lack of public detail on these potential revenue sources makes discussing their

potential difficult, so the remainder of the article will focus on the direct partnership with Coursera.

Coursera, and online education, are new enough that there is no proven return for offering online courses.

Most of this discussion will be based on the potential revenue sources Coursera officially offers its partners as listed in the contract between University of Michigan and Coursera, which is available online (and presumably contains similar language to Caltech's contract with Coursera for offering courses.).

The contract offers opportunities for both the University and Coursera to monetize courses and collect revenue independently, with any revenue collected by either party shared between Coursera and the University.

The exact percentages of revenue sharing vary from six to fifteen percent of gross revenue (depending on the duration the course is available on Coursera), along with twenty percent of all profits from the course.

The contract lists eight possible monetization models, which cover most methods that have been discussed at Caltech. The first two involve charging students

for additional recognition and possible credit for the courses.

This could involve charging for a non-credit certification from the University (distinct from normal Coursera certificates, which will be discussed in a future article),

similar to Coursera's “signature track”, which offers verified certificates for students who pay between thirty and one hundred dollars per course, or charging for students to take identity-verified exams in certified testing locations, which could be used to certify courses for credit that could be applied at real colleges (this option is available for at least five courses on Coursera).

The next two methods involve use of student performance data. One possibility is that prospective employers would be able to (with the student's permission) examine a specific student's performance in a course, presumably one listed by the student on their CV or resume, for a fee paid to Coursera.

The other possibility is that Coursera would provide (again, with students' permission) a list of students who met specified performance benchmarks to prospective employers for a fee, allowing the employers to recruit

courses as regular courses at the university (so the university can charge tuition to students enrolled in online courses – this has already been put into place with an entire graduate degree program offered by University of Washington through Coursera), and the licensing of specific courses to only particular companies for their private use (as part of employee training, for example).

Another method in practice, but not listed in the contract, is the practice of selling textbooks through the Coursera website, which has showed small initial returns.

In summary, there are a number of possible revenue models for Caltech through Coursera or other platforms (at least some of the above options are also offered through non-profit providers like edX).

The amount of possible revenue that can be derived from any given course, however, remains unclear, and only time will tell what potential financial benefit online education offers Caltech.

“The amount of possible revenue that can be derived from any given course, however, remains unclear...”

from high-performing students. It is possible, although unclear, that any students hired as a result of this “recruitment” procedure would result in additional payment to Coursera.

Additional possibilities in the initial Michigan-Coursera contract include allowing students to pay for extra academic support (such as tutoring or TA grading instead of automatic or peer grading), third-party sponsorship of courses (with permission of the instructor), the use of the online

## Russian Circles releases new album for broad audience

**NAILEN MATSCHKE**  
Contributing Writer

Russian Circles is yet another post-rock group from Chicago, active since 2004, with *Memorial* being their fifth full-length album. From the release of their debut album *Enter* in 2006, it has been clear that they are not afraid to delve into the heavier side of rock in addition to the airier sound that is so typical of many post-rock bands. Guitar parts on the record ranged from evoking Mastodon to shimmering clean bits that almost sound like background music from a movie. Unlike many post-rock groups, Russian Circles never really relied on traditional song structures, instead opting for songs that flowed from one idea to the next, so that the best moments were fleeting, but overall songs were fascinating. The band backed down sharply from the loudness of *Enter* on their second album, *Station* (2008), only hitting such energetic peaks a handful of times on the whole album. In 2009's *Geneva*, listeners got an album that was a mix of the previous two in terms of structure, but which had a much grittier, insidious tone throughout. In 2011 the acclaimed *Empros* was released, my personal favorite to date. It kept the dirtiness but demonstrated masterful care in dropping from soaring, atmospheric layers of textures into heavy riffs. *Memorial*, released on October 29, attempts to put a darker spin on the material of *Empros*, while maintaining the broad scope of sounds.

The album's opener, "Memoriam," is short for a Russian Circles song – clocking in at almost a minute and a half – because its sole purpose is as the introduction to the album. A distant guitar part, with some bass or synth notes and some sad strings overlaid, does a fantastic job at bringing out emotions in the listener. However, it's good that they kept it so short because as beautiful and mood-setting as it is, the song is very

repetitive. Next, "Deficit" comes in and explodes into a loud, lumbering take on the theme

minutes. I appreciate how the music changes around it, but it pushes the limits of my interest in

make you feel the emotions it's trying to convey. It is by no means radio friendly, but it is nevertheless

just the four main instruments of the band, but extra electronic sounds as well. The penultimate track, "Lebaron," is similarly well done. It is darker and almost paranoid-sounding, but it hits every element we have come to expect from Russian Circles' best work. Finally, we get to the close of the album with "Memorial," featuring a vocal part from singer Chelsea Wolfe, blending into the rest of the mix and providing a refreshing texture. The rest of the instrumentals are based off of the opener "Memoriam," but instead of sad strings we have a mix of effects that give the listener the feeling of being in a distinctly different place from the start – a more glowing, nostalgic one.

*Memorial* spends a lot more time with each emotion it tries to express than *Empros*, and when it succeeds, it's top-notch. Songs like "Cheyenne," and "1777" are definitely evocative of the darkness the band set out to capture. However, I think that by spending extra time with each idea, the band ends up forgetting about some of the progression of their earlier work. By wallowing in certain themes, they lose elements like angry grooves and sudden, soaring highs since it all tends to blend together on the mediocre songs. I definitely enjoy the album, and it gets a lot of things right. However, it can't compete with *Empros*, where every track was unique, interesting, and well done.

Fans of Isis or Pelican will almost certainly enjoy this release; those who like lighter groups such as Sigur Rós and don't mind a bit of metal in their music should still find something of their liking.

Russian Circles are in a nice middle ground between rock, indie, and metal, and without any divisive vocals or the extreme experimentation of groups like Godspeed You! Black Emperor. They are worth checking out for fans of those three genres, and I personally would start off with *Empros*.



-soundcloud.com

presented in "Memoriam," which continues with some variation for almost half the song's length, until diving into a faster, almost black metal-like part. The rest of the song is then centered around a repeated guitar pattern, with some constantly changing patterns flowing around it from the other instruments. However, it's pretty generic. If they were going to use it once to move the song to new places I wouldn't have any issue with it, but they instead play it or something similar for over three

the song.

Next up is "1777," which instead starts off quiet and ethereal and builds for a couple minutes up into a well-executed release. After that we get a couple minutes of running through ever-changing, frantic panics on all instruments, and then a part like the beginning that eventually plays itself out. The following track is "Cheyenne," which is slow and quiet the entire time, but wonderful. It's a great break in the middle of the album, and everything about it works to

easy to get lost in.

After that break is "Burial," which as its name suggests, is louder and heavier. Unlike "1777," though, the music doesn't move in waves; it goes from idea to idea just fine, but the result is that there's never a moment where you get an explosion of sound or a cool riff. It's an endless onslaught of noisy generic post-rock-inspired patterns. The following song, "Ethel," is the complete opposite, with a happy tone, an interesting structure, and a utilization of not

### NOMINATE YOUR FAVORITE PROFESSOR FOR THE FEYNMAN TEACHING PRIZE!

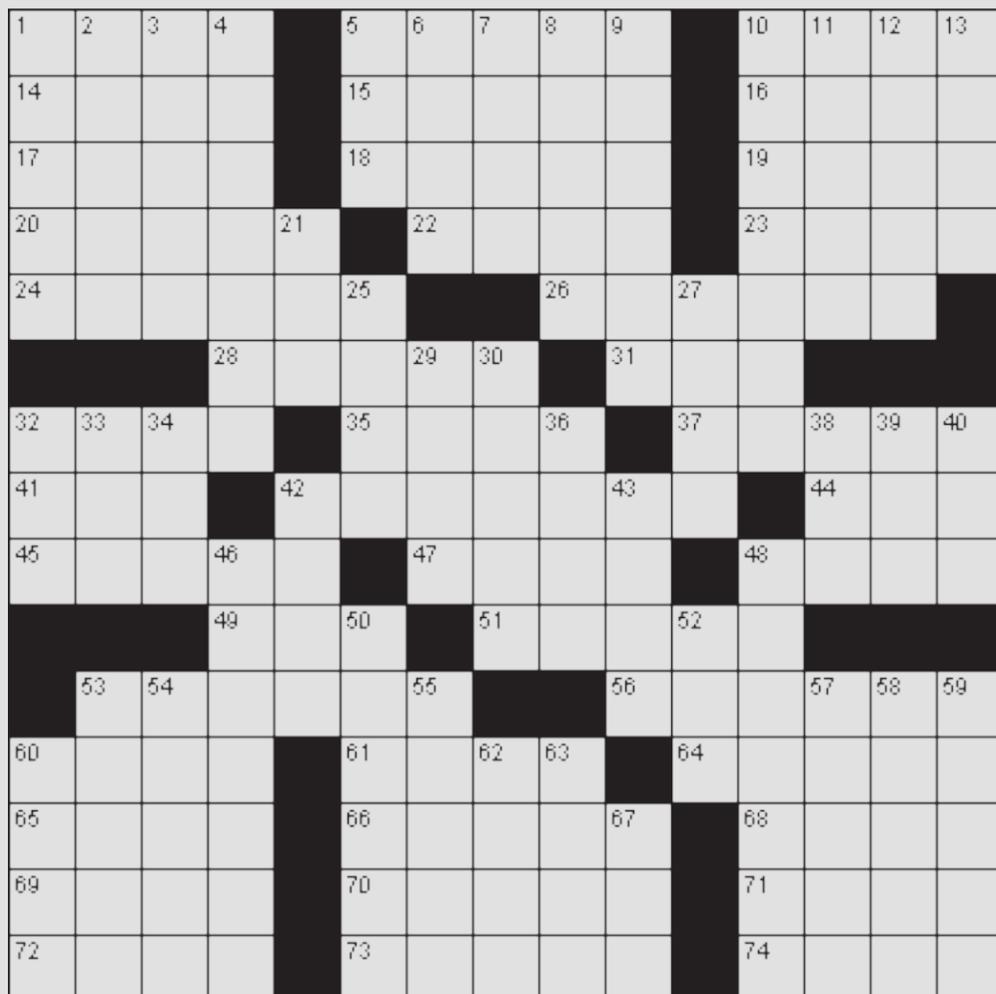
*Here's your chance to nominate your favorite professor for the 2013-14 Richard P. Feynman Prize for Excellence in Teaching! You have from now until January 2, 2014 to submit your nomination package to the Provost's Office to honor a professor who demonstrates, in the broadest sense, unusual ability, creativity, and innovation in undergraduate and graduate classroom or laboratory teaching.*

*The Feynman Prize is made possible through the generosity of Ione and Robert E. Paradise, with additional contributions from an anonymous local couple. Nominations for the Feynman Teaching Prize are welcome from faculty, students, postdoctoral scholars, staff, and alumni.*

*All professorial faculty of the Institute are eligible. The prize consists of a cash award of \$3,500, matched by an equivalent raise in the annual salary of the awardee. A letter of nomination and detailed supporting material, including, but not limited to, a curriculum vitae, course syllabus or description, and supporting recommendation letters should be emailed to kkerbs@caltech.edu or directed to the Feynman Prize Selection Committee, Office of the Provost, Mail Code 206-31, at the California Institute of Technology, Pasadena, California, 91125. Nomination packages are due by January 2, 2014.*

*Additional information including guidelines for the prize and FAQ may be found at <http://provost.caltech.edu/FeynmanTeachingPrize>. Further information can also be obtained from Karen Kerbs (626-395-6039; kkerbs@caltech.edu) in the Provost's Office.*

## Today's Puzzle: Crossword



### Across

- 1. Young sheep
- 5. Postal token
- 10. Theatrical performance
- 14. Object of worship
- 15. Card game
- 16. Rend
- 17. Part of the foot
- 18. Stage whisper
- 19. Malevolence
- 20. Hobo
- 22. Clip
- 23. Cachet
- 24. Periodical
- 26. Large cave
- 28. Rigid
- 31. Japanese currency
- 32. Tub
- 35. Prevaricated
- 37. Part of a plant
- 41. Epoch
- 42. Inactive or sleeping
- 44. Garland
- 45. Spooky
- 47. European currency unit
- 48. Part of a woodwind instrument
- 49. Males
- 51. Variety show

- 53. Creature
- 56. Requiring secret or mysterious knowledge
- 60. Catch sight of
- 61. Ring
- 64. Synthetic fabric
- 65. Song for solo voice
- 66. Silk-cotton tree
- 68. Coagulate
- 69. Monetary value
- 70. Send out
- 71. Misplace
- 72. Leg joint
- 73. Indigent
- 74. Pitcher

### Down

- 1. Enumerates
- 2. Worship
- 3. Tooth
- 4. Flaw
- 5. Heath resort
- 6. Flip a coin
- 7. Similar
- 8. Military doctor
- 9. Pay in advance
- 10. Gift
- 11. Internal organ
- 12. Characteristic of birds
- 13. Shout

- 21. Domestic companion
- 25. Storage tower
- 27. Sleeveless garment
- 29. Conflagration
- 30. Thighbone
- 32. Flying insect
- 33. Unit of surface area
- 34. Seafarer
- 36. Challenge
- 38. Beer
- 39. On the sheltered side
- 40. Young goat
- 42. Hold or view as important
- 43. Type of star
- 46. Copy
- 48. Use again after processing
- 50. Serviette
- 52. Large vase
- 53. Protective garment
- 54. Dissonance
- 55. Rental contract
- 57. Permit
- 58. Snare
- 59. Go in
- 60. Hammock
- 62. Part of a church
- 63. Forte
- 67. Tonality

[www.puzzlechoice.com]

## Theater Arts at Caltech / Caltech Players / EXPLiCIT AUDITIONS



**Saturday, November 23rd**  
2:00 - 6:00 pm  
TACIT House, 275 S. Hill Avenue

**Sunday, November 24th**  
2:00 - 6:00 pm  
Ramo Auditorium

Calling all performers: audition for RENT, Caltech's 2014 winter musical from the people who brought you Little Shop of Horrors. This rock musical by Jonathan Larson follows the life of a group of artistic friends coping with poverty and disease in New York City, with such famous songs as "Seasons of Love" and "La Vie Boheme".

We're looking for passionate and committed students, staff, or community members for positions onstage, backstage, or in the pit band.

For stage auditions, please come prepared to sing a song of your choice not from the show, and to read sides.

To inquire about backstage positions, contact [brophy@caltech.edu](mailto:brophy@caltech.edu)

To play in the pit band, email [jetson@caltech.edu](mailto:jetson@caltech.edu)

**Saturday and Sunday,  
December 7 & 8, 2013**  
Ramo Auditorium, 2:00 - 6:00 pm

Please join us for auditions for our Spring play

Caltech Professor Emeritus Oscar Mandel's ironic wit is brought forth in a novel new production of selected mini plays,

## Kukkurik Fables

## STUDENT DIRECTOR SHOWCASE

**Friday and Saturday, December 6 & 7**

7:00 pm

Ramo Auditorium

featuring

*The Philadelphia* by David Ives, directed by Chris Dosen, '17

*Here we are* by Dorothy Parker, directed by Dan Ilyinm, '17

*Flop Cop* by Dorothy Cunningham, directed by Clark Jhang, '16

*Timon & Pumbaa are Dead* by Manan Arya, grad student

*A Forgotten Cause* by Juan Diego Palomino, '17

Casts include:

Grant Remmen (grad student), Chinmay Nirkhe, ('17),  
Rebecca Tang ('16), Jeremy Brouillet (grad student)  
and Hui Ying Wen (JPL)

# Beavers rally for thrilling win in season opener

GoCaltech

Coming down to the game's final possessions, Caltech charged back for a thrilling season opening 58-55 win over Willamette on Friday evening.

It is the first season opening win for a Beavers squad since the 2004-05 season. Furthermore, it is the program's first season opening win against an NCAA opponent since the 1948-49 campaign.

"I am really proud of the way the guys fought from the opening tip," said sixth year head coach Oliver Eslinger. "Even with all the youth on the team I had confidence we would come away with a victory tonight."

The first half was an offensive struggle for both teams. Willamette went 11-for-29 (37.9 percent) from the floor while the home team converted on nine of their 28 attempts (32.1 percent).

The Bearcats never trailed in the first half and held a lead as large as 19-9 but Caltech dwindled down

that advantage during the final 9:39 of the stanza. The Beavers finished the first half on a 14-6 scoring spurt to close within 25-23 at the halftime buzzer.

With 12:32 left in the contest, Willamette pushed their halftime lead to 43-31 on an Alex Brown lay-up. Caltech proceeded to dominate the next five-plus minutes of the game. The Beavers made an 11-point deficit into a 51-45 lead capped off by a Bryan Joel three-pointer with 6:46 left in the game. Caltech never trailed the rest of the game but they were challenged.

During the final 4:09, the Bearcats had a chance to tie or



Junior Andrew Hogue dribbles toward victory.

-gocaltech.com

take the lead on four different possessions but could not. The game's final minute was especially thrilling. With Caltech holding a 57-55 lead, Avery Manu turned the ball over with 42 ticks on the clock.

Caltech couldn't put any points on the board on their ensuing possession but played solid defense to keep their lead.

The Beavers upped their lead to 58-55 when Luke Lango hit one of

two foul shots with eight seconds left. Talanoa Smith pulled up at the top of the key with two seconds left but his three-point attempt went off the rim and Caltech's David LeBaron grabbed the rebound as time expired to seal the win

"Even when we were down by 12 I still had confidence in our game plan," Eslinger said. "We were able to pound the ball inside and take advantage of the play underneath the basket."

Evidence of Caltech's solid play down low was their plus-17 rebounding margin while holding an 11-6 edge in second chance points.

Kc Emezie led all scorers with an 18-point effort on the strength of 7-for-9 shooting performance. Lango came off the bench to score 13 and dish off three assists in 32 minutes. Andrew Hogue and Lawrence Lee played huge roles down low as they grabbed 13 and 11 rebounds respectively.

# Senior Thomas Kwok honored with Brine Award

GoCaltech

For his efforts both on and off the field, senior Thomas Kwok was honored with the SCIAC men's soccer Brine Award of Distinction.

The award is a well-rounded honor that takes into account sportsmanship, community service and academic success as well as performance on the soccer field. It is voted on by the league's nine head coaches.

"This honor is very befitting of Kwok. He completely embodies the spirit of the award," said 13th year head soccer coach Rolo Uribe. "It has been such a privilege to coach him for four seasons, and I wish him nothing but the best. He is a special player and person. He represents what a SCIAC athlete should be."

Kwok started all 18 games for the Beavers this season. Dating back to last season, the native of San Francisco started 32 of the final 35 games he played in. He served as team captain in 2013.

Off the soccer field he serves throughout the Caltech and San Gabriel Valley communities. On campus he is a teaching assistant for freshman level chemistry courses, and he serves as a counselor for Fleming Hovse.

From 2009-2011 he voluntarily served in Malaysia for his church. While there, he traveled throughout the country helping to strengthen church relations in local communities. He learned the Malay language and culture while teaching families about his faith.

Kwok also plays outfield for the baseball team. After not playing prior to 2013, he started 21 games and batted .231 while posting a .976 field percentage in 82 chances.

He is the second Caltech player to earn the accolade after Grayson Chadwick earned the honor in 2009 and 2010.



Thomas Kwok makes a kick that unquestioningly decimates his opponents in mind and in spirit.

-gocaltech.com

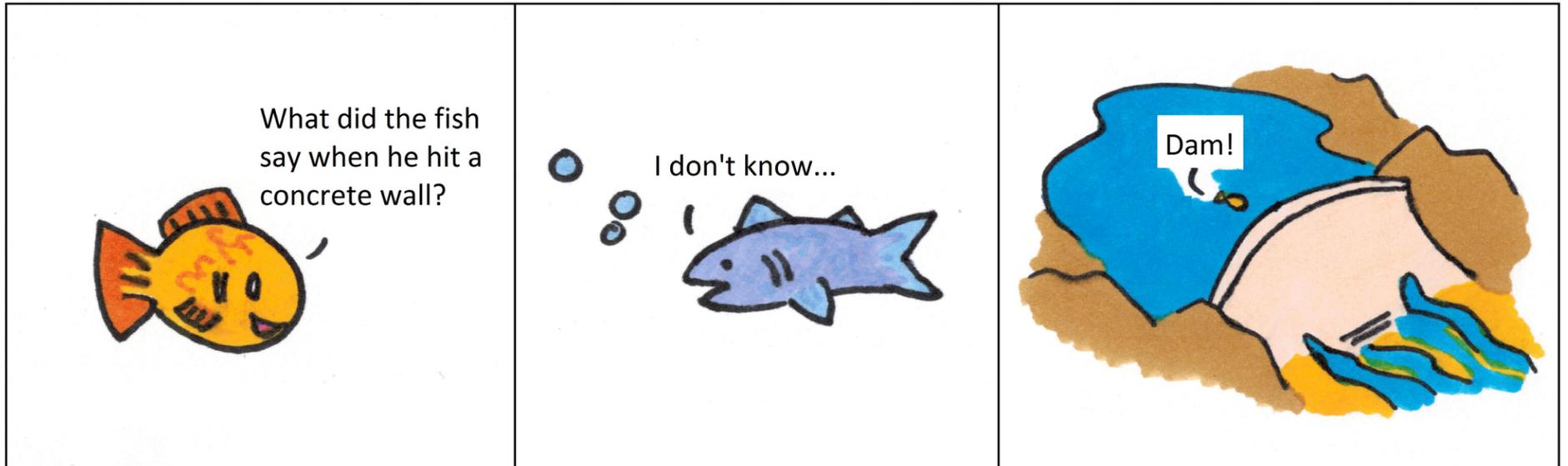
## Weekly Scoreboard

Men's Water Polo  
vs. Whittier  
L, 14-7 Final

Men's Basketball  
vs. Willamette  
W, 58-55 Final

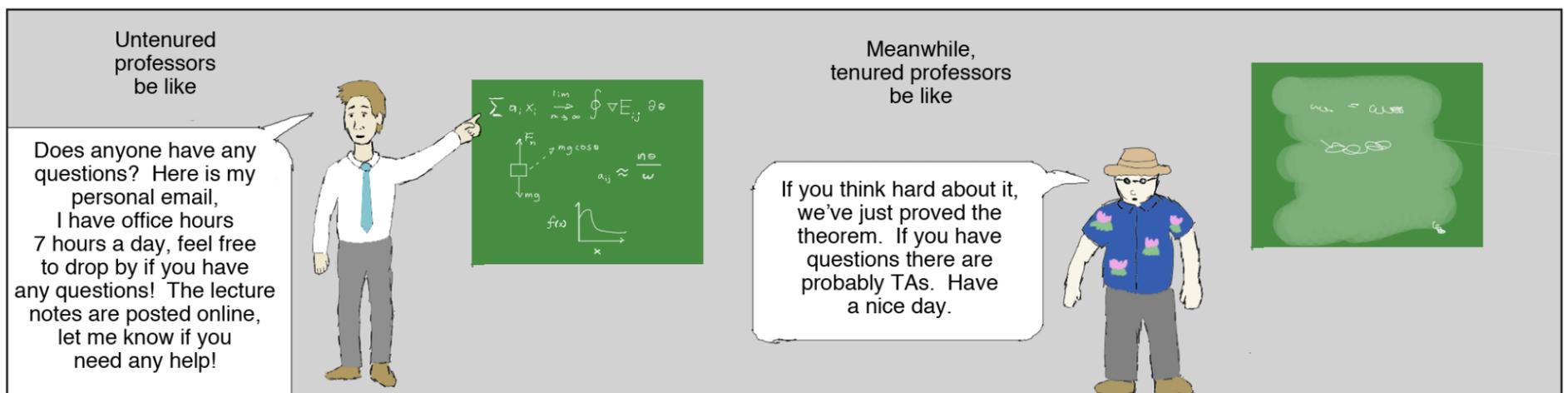
## Unoriginal Jokes

Kerry Betz



## Acquired Taste

Dr. Z



*For more photos, videos, and archives of previous issues, check out the Tech website!*

[tech.caltech.edu](http://tech.caltech.edu)

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