



From left to right: Antonio Rangel (Neuroeconomics), Jennifer Jackson (Geophysics), Paul Sternberg (Biology).

-coursera.org; seismolab.caltech.edu; wfwins.org; respectively

The Tech explores current research at Caltech

**LORI DAJOSE
AAKASH INDURKHYA**
Contributing Writers

Caltech is consistently ranked as one of the top research institutions in the world, and for good reason. Nobel-Prize-winning faculty, state-of-the-art laboratories, and the innovative Caltech spirit contribute to the many opportunities for research. And this isn't limited to professors and postdocs: over 80%

of the undergraduate population is able to conduct scientific research at some point during their studies here through the Summer Undergraduate Research Fellowship (SURF) program.

That being said, it's good to keep up to date on some of the various exciting discoveries in various labs.

Geophysics

Jennifer Jackson and her team are coming closer to determining the precise temperature of our planet's core.

Since the core is about 90% iron, the group used diamond anvil

cells to simulate the pressure iron experiences in the core. They found that iron's melting temperature was about 400K higher than earlier experiments had shown, suggesting that the core may be hotter than scientists originally believed.

Neuroeconomics

Researcher and professor Antonio Rangel is using cursor tracking information to better understand consumer decision making.

In experiments tracking choices between healthy and unhealthy options, the lab found that when making these decisions, a subject's cursor frequently moves towards one decision before settling on the

other. This work was presented at TEDxCaltech: The Brain last Friday.

Astrophysics

Data from the Caltech-operated NASA GALEX (Galaxy Evolution Explorer) mission has been used to identify the largest-known spiral galaxy, NGC 6872, 212 million light-years away from our own Milky Way.

It is more than five times the size of our galaxy, spanning more than 522,000 light-years.

Scientists believe its large size is a result of a merger with IC 4970, a much smaller disk galaxy, and that the pair of galaxies may give birth to another smaller one.

Biology

Paul Sternberg's lab is making progress in understanding how predatory fungi sense their prey, specifically, nematodes. His studies show that the fungi respond to ascarosides, which is the chemical that nematodes use to communicate. In response to this chemical, certain strains of fungi can make adhesive networks to trap and devour the nematodes. However, what's interesting is that fungi only respond when they are "nutrient-deprived," or in other words, when they're hungry.

Whether one is applying for a SURF or simply a fan of science, there is always fascinating research happening at Caltech.

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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*

French gay marriage rally	125,000 gather in Paris to support same-sex marriage bill	[NYT]
Bipartisan immig. reform	6 senators form bill granting amnesty with harsher regulations	[Fox News]
H5N1 studies resume	1 year self-imposed moratorium ends, confident in new precautions	[Nature]
Boeing still building	787 Dreamliners grounded by federal probe, remain in production	[CNN]
Russian anti-gay laws	20 detained after kiss-in protest outside of Duma in Moscow	[Reuters]
Riots in Egypt	33 Deaths in Port Said, state of emergency in three cities	[BBC]
Brazil nightclub fire	232 killed after fireworks at Kiss club in Santa Maria ignite building	[BBC]

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ASCIT Bylaw Amendment Proposal: Amendment to Article IX, Section 5

Replace:

Each Corporation member will be assessed thirty-six dollars (\$36) for the Big T, payable on the days of registration at the rate of twelve dollars (\$12) per term.

With:

As of 2013, each Corporation member will be assessed fifty-seven dollars (\$57) for the Big T, payable the day of registration each term at a rate of nineteen dollars (\$19) per term. The values shall be adjusted in these bylaws each year by a relative amount equal to the percentage change in the average Consumer Price Index through a majority vote of the Board of Directors.

Rationale:

The current Big T dues cannot support an annual yearbook, due to an increase in publication costs and inflation. That was the main reason that the 2006-2009 yearbooks were combined into one yearbook, and that our last few yearbooks have been late. Currently, the student fee only covers half of the yearbook (approximately \$35,000 per year), which is not enough to cover printing costs (approximately \$66,000 per year). This would increase the student contribution to approximately \$55,000 per year, which combined with advertising revenue will be able to fully support the annual printing costs of the Big T in future years. Also, the dues would be updated every year to account for inflation based off of the Consumer Price Index. Each year, the BoD would vote on a change, and the dollar prices and the year would be the only thing to change in the bylaws.

This year, the BoD pulled from reserves to allow the yearbook to be published, which is not a sustainable practice. If the yearbook is to survive in its current form, the dues must be changed, and so the BoD unanimously chose to propose this amendment.

*Approximation of the inflation rate of the past 20 years based off of the Consumer Price Index from the U.S. Department of Labor http://www.bls.gov/data/inflation_calculator.htm

* <ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt>

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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 business@caltech.edu. For subscription information, please send mail to "Subscriptions."

ASCIT Minutes

Minutes for January 24, 2013. Taken by Allika Walvekar

Officers present: Diego Caporale, Matt Fu, Zach Rivkin, Pushpa Neppala, Mario Zubia, Puikui Cheng, Michelle Tang, Allika Walvekar

Call to Order: 8:30 pm

President's Report (Diego):

Tool Training: Tool Training happened and ran as smoothly as we could have hoped. Dave was an excellent instructor, and kept the process light and engaging.

Big T: We will be voting on the Big T amendment on Tuesday, in accordance with the bylaws. For the past few years, the Big T has been struggling to publish on time due to lack of funds. This amendment allows them to continue to make high quality Big T's and to distribute them promptly (ideally before winter break). We encourage you to vote yes on this amendment, because if the amendment fails, then the current format of the Big T will need to be changed. The changes could be as severe as the Big T only is published every 3-4 years.

Officer's Reports:

V.P. of Academic Affairs (ARC Chair: Pushpa):

SFC: Will send out an official announcement for the SFC this week. Option updates were sent to The Tech this week. Puspha is putting together a focus group with faculty members to get their perspective on the honor code. She is also in the process of making room reservations for the option breakout sessions.

SFL: The first family style SFL this week went well.

Option Fair: Option fair will be on April 5th.

Pushpa is working on option teas with the MOSH, which will hopefully be in February and March.

UGSS: Will have our first undergraduate seminar series for Professor Tai in February.

Director of Operations (Mario): Organized the In n' Out truck for the Big T & Phoneathon distribution. Handled all logistics regarding the transport of the Big Ts.

Treasurer (Puikui):

Club Funding: Club sub-accounts officially set up, and club officers can send in club reimbursement forms now

Big T: The Big T staff really needs the Big T amendment to pass to ensure quality Big Ts in the future years.

Social Director (Michelle):

Big T & Phoneathon will take place on January 27th. Michelle will cover all marketing for the event. Planning on buying drinks and cups.

Winter Wonderland: The winter carnival will happen on Friday February 1st. Michelle ordered the ice rink and it will be placed in front of Beckman auditorium. There will also be fake snow.

Secretary (Allika): Continually working on updating Donut with the new minutes. With the new elections in the houses, will be updating donut with the new officers.

Techerland: The genesis of heels for women and men

NINA BUDAeva
Staff Writer

“Ouch, my feet are starting to hurt” Chelsea complained to Lily. “Suck it up. No pain, no gain!” I heard Lily say. We were all in the bathroom taking a breather before going back out to a party going on in one of the lounges.

“I can’t just take them off, can I?” Chelsea asked? Lily didn’t even answer. She just gave Chelsea a silencing glare.

“So unfair,” Chelsea proclaimed. “We girls have to suffer on tottering heels and the guys just wear comfortable flat shoes all the time.”

“First of all, you don’t know how comfortable guys feel in what they wear when they dress up,” Lily explained in her usual way. “Second, there’s a reason girls wear heels. Third, you have to practice wearing them. Otherwise, all of the magic that they might do for you will only make you look worse. There’s nothing more stressful than watching a girl struggling with her shoes, or walking on bent knees because she doesn’t know how to distribute her weight throughout the shoe correctly.”

I couldn’t politely stay in the bathroom much longer without making my eavesdropping obvious, so I went out into the hallway to wait for some friends before returning to the party. While waiting, I thought about their conversation. My own feet were beginning to get tired, but I hadn’t noticed this until Chelsea’s whining.

Now I realized just how much some people wear heels and how natural they feel to me now. I feel lucky that I spent many years dancing in pointe shoes and many

more years training my feet so that I could dance.

I’m also grateful to my Mother who made sure I walked in heels correctly from an early age. And yet still, after a long night of dancing, it is always a relief to take off those shoes and scrunch my toes. The pain Chelsea must be feeling, and the blisters she must be getting after going out in heels for one of the first times in her life made me admire her courage and resolve.

These thoughts made me forget about my own discomfort and I walked off quickly with my friends as they finally came down the hallway.

As usual, the entrance to the lounge that held the party was lined with people leaning against the walls

and anyone who entered or left the lounge had to get properly acknowledged by this crowd.

There were two types of people here: those who were unsure what to do next and were nervously trying to read the body and facial cues coming from their companions, and those who were just a bit too jolly to handle the lounge itself. After finally making it into the lounge, we were joined by Victoria.



King Louis XIV poses in his stylish four-inch red heels.

- <http://news.bbcimg.co.uk/>

Mingling with the crowd, I saw many people greeting each like long-lost lovers (although really, their social engines were just very well-oiled with that magical fluid that often drives many parties).

“He-eyyyy, hey gurrll!” Victoria and I got some sloppy hugs from girls we’d never really talked to and I knew that the next day, they would pass us and not even make eye contact. Such is the confusing

world of interactions. The next morning I woke up and the first thing I saw were my shoes lying on the floor by my bed. Immediately, I felt a slight numbness in my feet and then I remembered Chelsea’s conversation with Lily.

This got me thinking about why exactly so many girls resort to heels. They make us taller and slimmer, they make our legs seem longer, and they enhance the posture of girls who wear them correctly.

And yet, is the discomfort they give to so many girls worth it? Clearly since they are a staple of so many women’s wardrobes, their magic must be worth the sacrifice.

I went back to the origin of high heels. For centuries the heeled shoe was a common form of riding footwear in the near east.

The Persian cavalry wore heels in the 16th century in order to stand firmly in their stirrups when they needed to shoot in battles against the Ottomans. Europeans caught the Eastern bug and the most fashionable members of the high society adopted Eastern fashions, including the heeled shoe introduced by the Persians who tried to collaborate with Europe to fight the Ottoman Empire.

Eventually heeled shoes trickled down to lower levels of society, so in order to set themselves above the rest, high society began wearing higher heels. As impractical as they were on cobbled and muddy streets, high heels, along with other luxurious dress, became a symbol of the aristocracy. However, it was the men who wore the heels. These men appeared taller and mightier and often symbols of power were displayed on the backs of their increasingly high heels. The French King Louis XIV who was only 163

cm (5’4”) wore 10-cm (4”) heels. His were exclusively red – an expensive and militant color at the time. In the 1670’s, the King issued an edict saying that only men of his court could wear red heels.

This power-fashion spread throughout Western Europe. In 1661, England’s King Charles II who was not short at all (185 cm) was also seen wearing rather high red heels at his coronation.

In the 1600’s, the ladies started to adopt male fashions, and began by cutting their hair shorter and having more masculine fits. They emphasized broad shoulders with epaulettes (shoulder pieces originally used in the army as marks of rank).

They would wear masculine hats, and even smoke pipes! Eventually, they also adopted heeled shoes as part of their growing masculinity. By now, heels were a clear symbol of power and sophistication which the ladies eagerly made their own.

Eventually, they became a staple of the female wardrobe but faded out of male fashion, except of course for the much-loved cowboy boots and maybe some ‘80’s rock concert costumes. Therefore, I can understand Lily’s innate drive to wear elegant heels and Chelsea’s determination to endure the temporary discomfort of these power symbols.

These talons, as the French call them (French for “birds’ claws”), are the very symbol of strength and power which is now graciously reserved for the ladies. We go, girls!

So, I got up, got dressed, did my make-up, rubbed my sore feet, and slipped on a pair of day-time King Louis XIV heels to go out and get breakfast.

Obama’s inauguration speech leaves much to be desired

KELSEY JAMES
Contributing Writer

On January 22, 2013, President Obama was sworn in to his second term as President of the United States of America.

Many of my more liberally inclined friends urged me to listen to his inauguration speech; they assured me that his inauguration speech was far more liberal in tone than his first had been.

They claimed that it was a sign that his second term would be what his first term should have been, now that reelection was out of the picture.

Even if this is true, the very fact that this degree of lying and duplicity is accepted by so many “liberals” who will claim in the very next breath that they support campaign reform, oppose corruption, and so on highlights merely one aspect of our incurably rotten and corrupt system of government.

Still, I watched the speech. After all, perhaps he’d promised that he would fight the erosion of personal liberties, or that he would put an

end to the murder of innocent brown people overseas, and I could pretend to believe that he meant it this time for some reason. Or maybe he gave everyone in the audience a free puppy—who knows.

The following quotes are taken from the New York Times’ transcript of Obama’s second inaugural speech.

“A little girl born into the bleakest poverty knows that she has the same chance to succeed as anybody else.”

This statement is so divorced from reality that it is insulting. The abstract image of a child growing up in poverty overcoming her circumstances

to become a member of a higher class (how wonderful this idea of class, reducing the value of a living breathing human being to a convenient number to be slotted into an income bracket) is certainly an inspiring one, and it does

occasionally happen. But does he really think we’re stupid enough to believe that Bill Gates’ child has the same set of opportunities that Jane Doe, our impoverished heroine, does?

During the election season so blessedly long ago, my Facebook

better. “We, the people, still believe that enduring security and lasting peace do not require perpetual war.”

I certainly believe that, which is why I have never sent drones into Pakistan and Yemen or brushed off the death of innocents in the name

“

Still, maybe I could hope for incremental changes over the course of years, and ignore the racism and classism, the police beatings and homeless, the dead foreigners and suicidal soldiers that face us every day. After all, that’s what America is about.

”

feed was bombarded with articles about Romney’s “47%” comments, implying that he hated the poor or, at best, was completely unable to empathize. While this is almost certainly true, I would hesitate to claim that patronizing them is any

of fighting terrorism. Of course, this does not officially count as a war; how could it?

War, while it is horrible, implies that there are multiple sides, which each have a possibility of harming the others.

In drone warfare, the worst the US could possibly do is to lose its shiny new toy, while many Pakistanis and Yemenis live in daily fear of being struck down by a foe they cannot touch.

That is not warfare: that is slaughter. I was also unaware that the war in Afghanistan had ended. As a conflict that has been going on for over 11 years, surely that is the definition of perpetual warfare.

On the bright side, Obama did declare that gay marriage was just as valid as straight marriage, a shocking and bold statement in the year 2013. He also claimed we would “respond to the threat of climate change.” Again, this declaration comes several years later than it should have, with every day of inaction harming the environment.

Still, maybe I could hope for incremental changes over the course of years, and ignore the racism and classism, the police beatings and homeless, the dead foreigners and suicidal soldiers that face us every day. After all, that’s what America is about.

Meet the two previous Professors of the Month

A brief profile of November's Prof of the Month: Joel Tropp

SANDHYA CHANDRASEKARAN
News Editor

Professor Joel Tropp is no novice when it comes to teaching courses to Caltech students.

Moving to Caltech in 2007 after finishing a postdoc at the University of Michigan, Tropp has taught six different courses over ten terms.

He taught ACM/EE116, Introduction to Probability and Random Processes with Applications, for the first time last fall and received several positive reviews from his students.

As ACM/EE116 is a cross-listed course, Tropp had the additional task of catering to several different groups of individuals, each of whom had varied exposure to the covered material. However, by structuring his course around

periodic checkpoints, such as quizzes and problem sets, he covered the material in a steady, progressive manner.

One student admitted, "The quizzes forced me to study over my notes and the textbook before each class, so the quizzes actually kept me up to date on the material and allowed me to learn the material really well."

Furthermore, the rigor of mathematical proofs expected by Tropp prepared the students to fully understand and defend their answers on problem sets.

One student promised, "If you put a lot of effort into [the course], you will be rewarded with a solid foundation [in] probability."

Tropp's thoroughness and forethought in structuring this course was evident early on from

his lecturing style, which was commended by a number of students.

One student noted, "He has excellent pacing and an ability to lecture without leaving any question unanswered, clearly stating underlying assumptions for major results in probability."

In this manner, Tropp was able to unify a class consisting of students from a number of different fields.

Aside from the strictly descriptive aspects of the course, Tropp's personable nature allowed the students to become more comfortable with the material at their own pace.

As one student commented, "[Professor Tropp] relates well to students, and uses very well-prepared lectures. The problem sets are well-thought out and he

shows genuine care for our learning."

It is safe to say that Tropp has made a sizable impact on his students through this course. "One student praised, "All around, he's been one of the best professors I've had at Caltech, and he deserves to be recognized." It appears that many of his other students share that sentiment.

Professor Tropp is currently teaching ACM 113, Introduction to Optimization, during the winter term. Aside from his academic and professional duties, Tropp is an avid traveller and frequents countries around the globe.



- Provided by Joel Tropp

A brief profile of December's Prof of the Month: Jason Alicea

SANDHYA CHANDRASEKARAN
News Editor

Professor Jason Alicea began his teaching career at Caltech this past fall term as the lecturer for Ph127, the advanced statistical mechanics course. Although he took on the course relatively late given his recent arrival, Alicea not only did the course justice, but also did so in such a way that primed his students to master and thoroughly enjoy the material.

Much of this comes from the time and effort he spends dedicated to preparing and structuring his lectures prior to class. Alicea was also fortunate to have the fantastic course materials of previous course instructor Professor Lesik Motrunich to build upon. Nonetheless, the results speak for themselves. As one student commented, "All of his classes are very engaging, and you can

tell that he spends a lot of time planning his lectures and making sure they are accessible to everyone in the class." Another praised, "His lectures are probably the best organized out of any math or physics class I've taken so far. I've been using my notes I took in class more than the textbook, and the textbook for the class is one of the best textbooks used here. He's also a very lecturer and does an excellent job covering all of the new material, and connecting to interesting physical phenomena that aren't explicitly part of the course curriculum." Alicea translates this meticulousness into choosing suitable homework assignments



- Provided by Jason Alicea

that supplement the lecture material.

Students noted that, "the number of units for the course is accurate, and the problem sets are instructive, so the time spent on them serves just as well for learning the material as lecture does."

Another aspect that students truly appreciated was Alicea's willingness to schedule make-up classes for students when he had prior commitments conflicting with scheduled times, "which is rare amongst Caltech professors," one student pointed out.

But what it really comes down to at the end of the day is the excitement Alicea feels towards the subject matter. His

students explained, "He is also very enthusiastic about what he is teaching, and that makes me enthusiastic about the material. He always answers our questions clearly and never makes us feel silly or dumb even when we do ask him redundant questions."

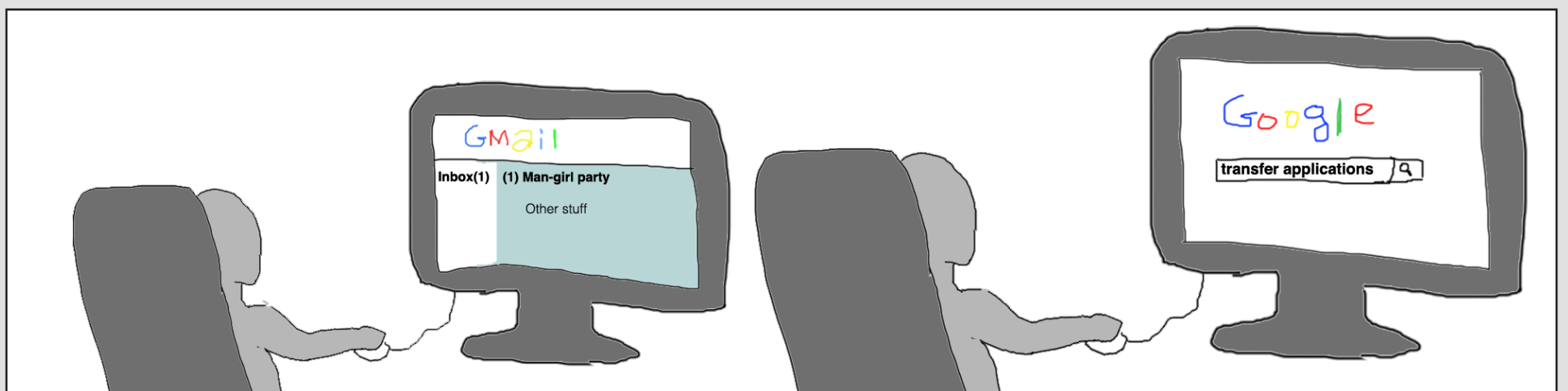
His passion for physics invokes the very same in his eager students.

Although Alicea is new to the Caltech faculty, he is no stranger to southern California. Having earned his Ph.D. in 2007 from the University of California, Santa Barbara, in physics, Alicea was a Caltech postdoc for three years before taking on an assistant professor position at the University of California, Irvine in physics and astronomy. Now at Caltech, Alicea focuses his interests on condensed matter theory. His lab explores topological quantum computation, quantum Hall physics, and frustrated magnetism.

Bonus comic! The humor section overfloweth.

Acquired Taste

by Dr. Z





Caltech Library

Study Spaces

The library is a good place to visit when you want to study. Whether you want to work collaboratively or independently, there is a study space that will meet your needs.

- Group study rooms in the Sherman Fairchild Library (SFL) can be reserved online.
- There is silent study space on SFL-2
- Millikan 7 offers lovely views from the study carrels
- The branch libraries in Dabney, Cahill and North Mudd include quiet and unique work spaces.



Please email library@caltech.edu with questions, feedback or to suggest a book for purchase.

<http://library.caltech.edu/>

All Serious Physical Science Students
A must read

Foundations of Physics

By
Joseph M. Brown
Ph.D., Purdue University, 1952

- Starts with basic Newtonian particles
- Derives conservation of mass, momentum, and energy
- Derives Newton's equations of motion
- Shows why Maxwell-Boltzmann gas parameters v_r and v_m arranged as $[(v_r - v_m)/v_m]^2 = (\sqrt{3\pi/8} - 1)^2 = 1/137.1$ is fundamental to quantum mechanics
- Shows how neutrinos develop 10^6 newton thrust
- Proves that Newtonian particles can form stable inhomogeneous states – the neutrinos
- Shows why fundamental angular momentum has one value – $1/2$ Planck's constant
- Shows what produces the magnitude of the proton mass
- Shows how hydrogen is formed
- Shows what causes electric charge
- Derives the strong nuclear force
- Shows how matter motion is accomplished
- Shows what causes matter waves and magnetism
- Derives superconductivity
- Derives the neutron and what causes nuclear decay
- Shows exactly what a photon is
- Shows what causes gravitation
- Shows how atoms are formed
- Shows how stars are formed
- Shows why photons decay with travel
- Shows why matter we see was formed 10^{10} years ago

Other books by Dr. Brown

The Grand Unified Theory of Physics,
ISBN 9780971294462, 2004, \$29.95

The comprehensive unified theory showing what the neutrino structure must be

The Chemistry and Mechanics of Human Aging,
ISBN 9780971294486, 2008, \$19.95

An increment of torsional strain is induced in DNA at each division – probably the cause of aging.

Photons and the Elementary Particles,
ISBN 9780971294455, 2011, \$29.95

The detailed structure of the photon is derived.

The Neutrino,
ISBN 9780971294479, 2012, \$29.95

Finally a rigorous proof is obtained of the neutrino structure which is a counter example to the second law of thermodynamics. The neutrino is a translating tornado-like stable flow pattern.

Principles of Science,
ISBN 0-9626768-0-2, 1991, \$39.95

Language and mathematics foundations are derived. Also an outline of a unified science theory is presented.

See the destruction of age-old misconceptions of the Universe

- Counter example to the Second Law of Thermodynamics
- Einstein's theory of relativity is erroneous – see how to find the absolute speed of the earth
- See the fallacy of the expanding Universe



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Countdown to SFC: Update number three

PUSHPA NEPPALA ARC Chair

Given the upcoming Student Faculty Conference (SFC), the ARC and *The Tech* established a column updating the student body on ongoing discussions surrounding curriculum changes.

Approximately every month up until the SFC, updates from the option committees (comprised of both students and faculty) will be published here.

Please feel free to email Pushpa (pneppala@caltech.edu) or the contact person listed alongside.

ACM (Michael Zhang, zhang.michael.y@gmail.com)

Fall term heavy so trying to move classes (ACM 10/11) to spring term

Possible student mentorship program

Proposal of unofficial "tracks" to help students choose elective courses

Astrophysics (Gregory Simonian, gsimonia@caltech.edu)

Specific Ph 3 requirement will be dropped.

Ph 12 will be recommended, but not a requirement.

Try and incorporate more interactive modes of learning into classes.

Applied Physics (Alexander Mouschovias, atm@caltech.edu)

Changes to APh 17, 77, and 109 will be discussed at our next meeting.

An APh 125 is still possible but less likely.

We are thinking of requiring Ph 12abc. If you have comments on this, please send them to me.

Business Economics and Management (Misha Raffiee, mraffiee@caltech.edu)

There is overwhelming support for the creation of a BEM pizza class and reinstatement of the BEM club.

Currently discussing changes in graduation requirements under new core based on results from the survey.

We have started preparing our SFC presentation and final report and will be meeting with committee faculty to finalize in the next two weeks

Biology (Stephanie Kwan, skwan@caltech.edu)

Reviewing results from survey and compiling into SFC presentation

In agreement with results from the student survey, Biology Faculty have voted to require Ma 2, Ma 3, and two of Ph 2, 3, and 4 (still 2 terms each of 2nd year math/physics).

These do not have to be taken consecutively or in a fixed order and can be satisfied with a "reasonable" replacement.

More information to follow at the SFC

Bioengineering (Malvika Verma, mverma@caltech.edu)

Had successful BE SFC luncheon with undergrads (sophomores and above) and Prof Niles Pierce and Prof Richard Murray

Winter term of BE option is very heavy junior and senior year, so we are requesting professors to teach more classes spring term

Figure out what to do with Phys 2abc or Phys 2, 3, 4 or chemistry classes. iGEM team should get started again!

Standardize BE 98 (undergrad yr-round research) with committee of professors and reports and presentations

Will have another meeting within 2 weeks and write the SFC report and presentation

Chemical Engineering (Sabrina Sun, ssun@caltech.edu)

Faculty agenda:

1. Replace Ph2b with Ch21c to be taken spring term of junior year.

2. Replace Ma2b with ChemE computation class to be taken winter term of sophomore year.

3. Introduce more COMSOL in ChE103b.

4. Make instructions for senior thesis accessible on website,

5. Determine whether department can accommodate more graduate TAs.

Undergrad agenda:

1. Consult Mike Gordon from UCSB about ChemE computation class.

2. Survey former undergrad and grad TAs.

3. Talk to AICHE about organizing monthly student-faculty lunches.

Computer Science (Mike Yurko, m@caltech.edu)

Reviewed results of survey. Satisfaction has greatly improved from the last two CS SFCs.

Continued to discuss what parts of core would be retained. Ma3 likely, but Ma2 and physics core are still being discussed.

Engineering and Applied Sciences (Matthew Voss, stericinterference@gmail.com)

The survey is currently out. Waiting for more responses before beginning to analyze data.

We're meeting with the Professors next week to discuss catalog requirements and the feasibility of implementation of potential changes to the major.

Electrical Engineering (Jomya Lei, jlei@caltech.edu)

Instead of a set suggested schedule for the core EE requirements, there will be suggested schedules depending on interest (circuits, signal processing, computer engineering, biodevices, etc). The core EE requirements will remain the same, but it might be in a different order.

Talking to Dr. Megdal about potentially having two project options in EE90 - one for single people projects and one for team projects.

Mechanical Engineering (Sebastián Rojas Mata, srojas@caltech.edu)

44 students responded the survey: 22 seniors, 10 juniors, 11 sophomores and 1 freshman.

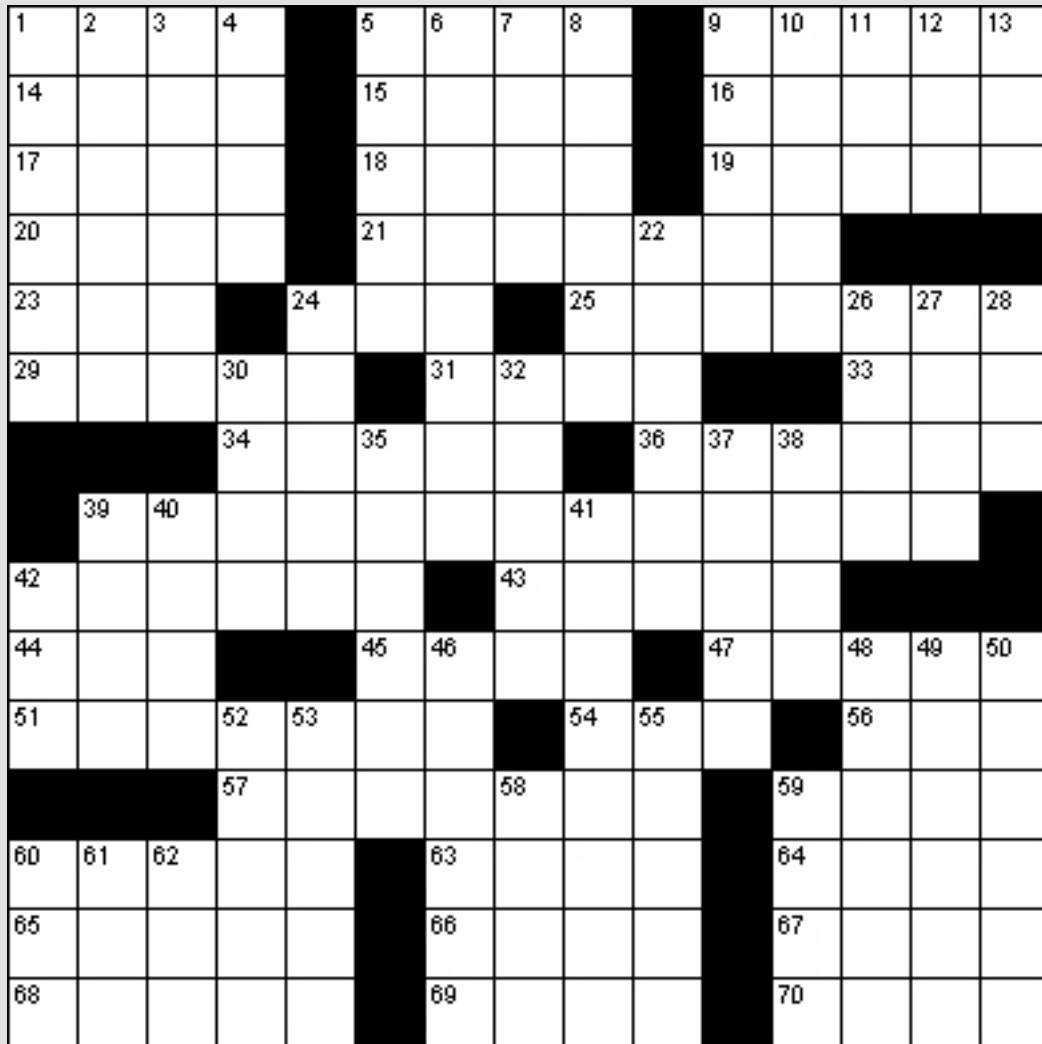
No unexpected or surprising results. Role of sophomore core to be discussed further, probably going to require all but one or two classes.

Changes to the ME core had a welcoming to indifferent reception. Research related questions and results will be discussed at the next meeting. Presentation and report drafting will begin shortly.

Physics (Valère Lambert, vlambert@caltech.edu)

Allowing Ph 5 and APh 9 to satisfy Ph 3 requirement

Today's Puzzle: Crossword



- Across**
- 1. Comparative of little
 - 5. Mantle
 - 9. Rule made by local authority
 - 14. Succulent
 - 15. Symbol
 - 16. Awaken
 - 17. Excavation
 - 18. Overwhelming defeat
 - 19. Bound under moral obligation
 - 20. Test
 - 21. Custodian
 - 23. Unit of luminance
 - 24. Ballet step
 - 25. Tedious
 - 29. Snares
 - 31. Story
 - 33. Usually follows neither
 - 34. Fertile part of a desert
 - 36. Minister
 - 39. Visual misconception
 - 42. Earnest
 - 43. Benefactor
 - 44. Not in
 - 45. Intense or sharp
 - 47. The lowest degree
 - 51. Widen
 - 54. Ancient Roman god
 - 56. For each
 - 57. Wine merchant
 - 59. Prima donna
 - 60. Candle
 - 63. South African currency
 - 64. Part of a woodwind instrument
 - 65. Alarm
 - 66. Part of a church
 - 67. Land measure
 - 68. Trivial
 - 69. Person of equal standing in a group
 - 70. Alcoholic beverage
 - 27. Natural satellite
 - 28. Make a mistake
 - 30. Rod
 - 32. Stage whisper
 - 35. Submerged
 - 37. Coral reef surrounding a lagoon
 - 38. Father
 - 39. Unit of time
 - 40. Singing voice
 - 41. Having no intelligible meaning
 - 42. Weep
 - 46. Ensnare
 - 48. Each
 - 49. Austere
 - 50. Merchant
 - 52. Deflect
 - 53. Unclean
 - 55. Command
 - 58. Part of the neck
 - 59. Dreary
 - 60. Strike lightly
 - 61. Brew
 - 62. Domesticated animal
- Down**
- 1. Dirge
 - 2. Potion
 - 3. Musical composition
 - 4. Appear
 - 5. Approximately in or at
 - 6. Physical science relating to sound
 - 7. Decant
 - 8. Imply
 - 9. Stream
 - 10. Belonging to you
 - 11. Carry with difficulty
 - 12. Type of tree
 - 13. Moisture
 - 22. Surgical instrument
 - 24. Sacred song
 - 26. Upon

[<http://www.puzzlechoice.com/>]

Caltech Public Events is now hiring student ushers. \$15 per hour to work concerts, performances, lectures, films and parties.

No experience needed, no hard labor, flexible schedules.

**Requirements: Caltech student, Positive attitude, Friendly personality*

To apply email Adam Jacobo (ajacobo@caltech.edu) or call (626)395-5907

For info on Caltech Public Events visit: www.caltech.edu/content/public-events

Caltech fencing team travels to San Diego for quad meet

FROM GOCALTECH.COM

SAN DIEGO, CA – The Caltech fencing team travel to UC San Diego for a quad meet on Saturday afternoon.

Along with the host Tritons, the Beavers faced-off against UC Irvine and Arizona State.

“Having fenced these teams earlier in the year, we had a much stronger showing this time. We completely trounced UCI and posted a number of wins against Arizona and UCSD,” Stan Schor said. “On the men’s epee squad, we’ve really made a lot of progress in terms of fencing as a team: taking notes about every opponent, carefully analyzing each of our teammates’ bouts, and utilizing time-outs to talk strategy. I definitely think that effort is showing.”

The Beavers most successful bouts came against UC Irvine.

The Beavers grabbed team wins in both men’s and women’s competition. Jon Schor won all three of his bouts in saber to help set the tone for the team win. Similarly during the foil dual, Eugene Vinitzky swept through his three bouts. Another veteran Beaver fencer, Stan Schor, posted a perfect result in his three epee bouts.

During the women’s competition against the Anteaters, Katie Fisher and Becky Tang each won two bouts in epee. The team win was secured as Ingrid Fielder won all three in epee while Catherine Pavlov took two of three.

In a well competed dual against Arizona State the Beavers posted a handful of individual wins against the Sun Devils.

Jon Schor grabbed three wins during saber as the Beavers lost a tightly contested team saber event. The trio of Stan Schor, Taylor Strumwasser and John Christian each grabbed one win in epee.

Fisher and Tang had nice foil bouts during the women’s meet against the Sun Devils. Fisher swept her three bouts while Tang won two.

“I think we did really well yesterday! We were up against some

challenging teams and some teams right around our level, and I think we stepped up to the challenge at every occasion. Women’s foil beat ASU and tied UCI, which was a great validation of how far we’ve come.

“My teammate Becky has really shown improvement since the beginning of the year; your first few meets are always tough because you don’t know quite what to expect, but she’s won some challenging bouts and really pushed herself to do well,” Fisher said.

While the Beavers struggled against UC San Diego they were able to bring home some individual wins in epee.

Stan Schor and John Christian each won a bout in while Pavlov won a bout in the women’s dual.

Next up for the Beavers is a trip to Evanston, IL for the Northwestern duals in two weeks.

“The results from this meet really just helped underscore our excitement to get out there to Northwestern, where we’ll have a much wider and more diverse field of competitors. We’ve been training hard and we’re ready to rack up more wins for Caltech,” Stan Schor said.

Fisher added, “Overall, I think we’re hitting our peak as the season picks up. We’ve all learned a lot of new things and are eager to put them into action.

“Northwestern, our toughest tournament of the season, is next week, but I have no doubt that we’re ready.”

Women Caltech Results

UC San Diego 26, Caltech 1
(Saber 9-0, Foil 9-0, Epee 8-1)

Caltech 16, UC Irvine 7 (Saber 6-0, Foil 4-4, Epee 6-3)

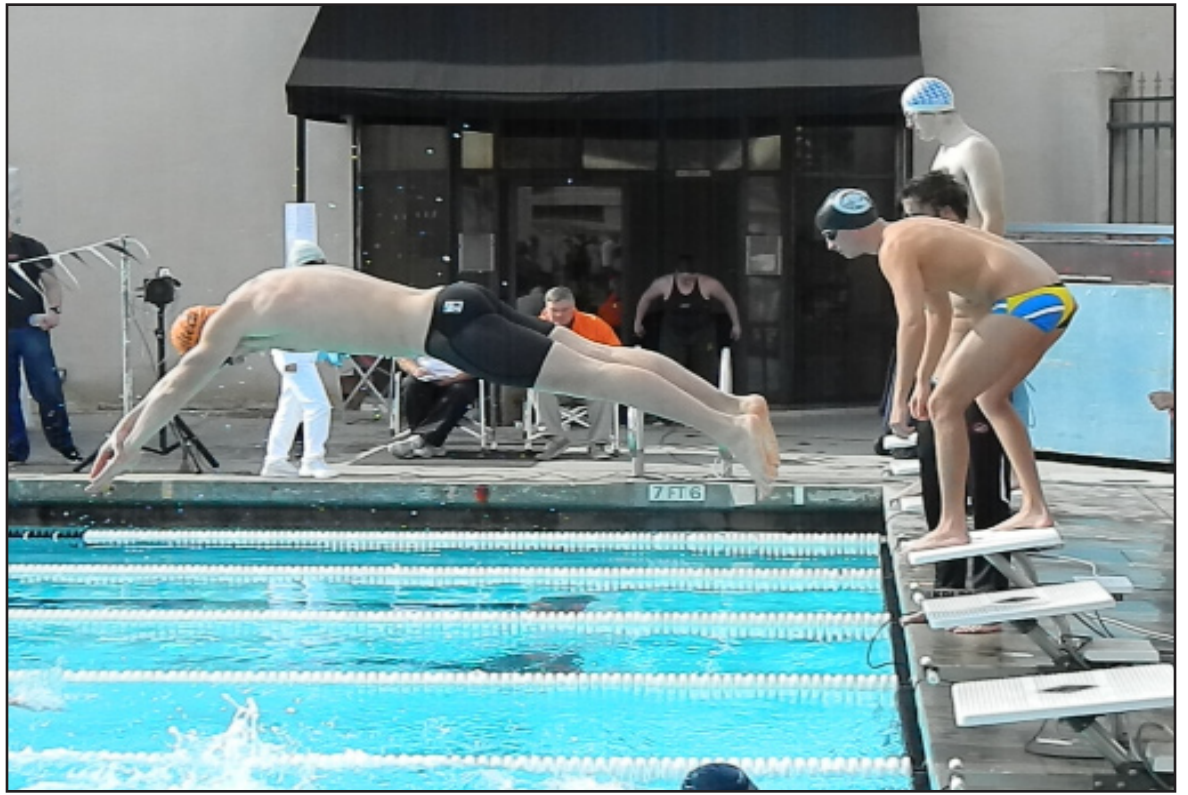
Arizona State 19, Caltech 6
(Saber 6-2, Foil 5-3, Epee 8-1)

Men Caltech Results

UC San Diego 25, Caltech 2
(Saber 9-0, Foil 9-0, Epee 7-2)

Caltech 21, UC Irvine 6 (Saber 7-2, Foil 7-2, Epee 7-2)

Arizona State 19, Caltech 8
(Saber 5-4, Foil 8-1, Epee 6-3)



Freshman Patric Eck soared above the competition (ayyy, you like?), posting 29 points for the Beavers as they defeated Chapman.

- Amol Kamat

Weekly Scoreboard

*Men’s Basketball
vs. Cal Lutheran
L, 66-47 Final*

*Women’s Basketball
vs. Cal Lutheran
L, 58-40 Final*

*Women’s Basketball
at Chapman
L, 71-49 Final*

*Men’s Basketball
at Chapman
L, 72-65 Final*

Upcoming Games

*January 30, 2013
Men’s Basketball
vs. Occidental
7:30 PM*

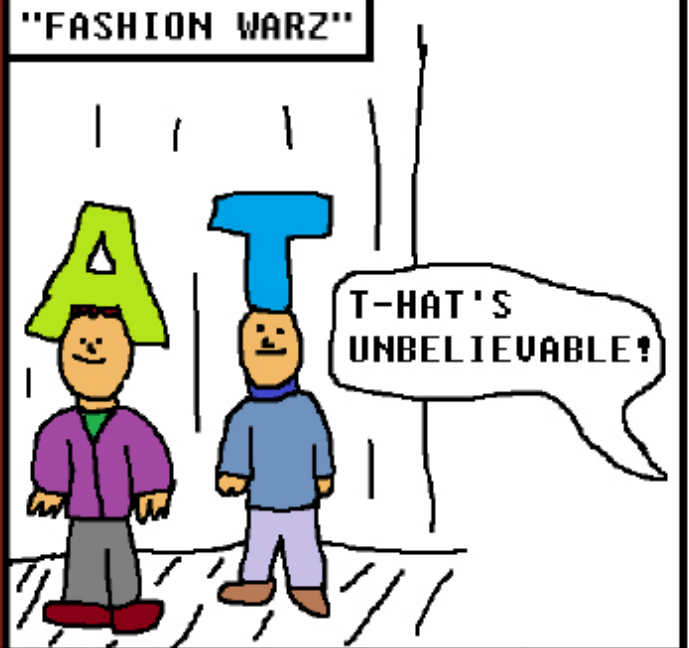
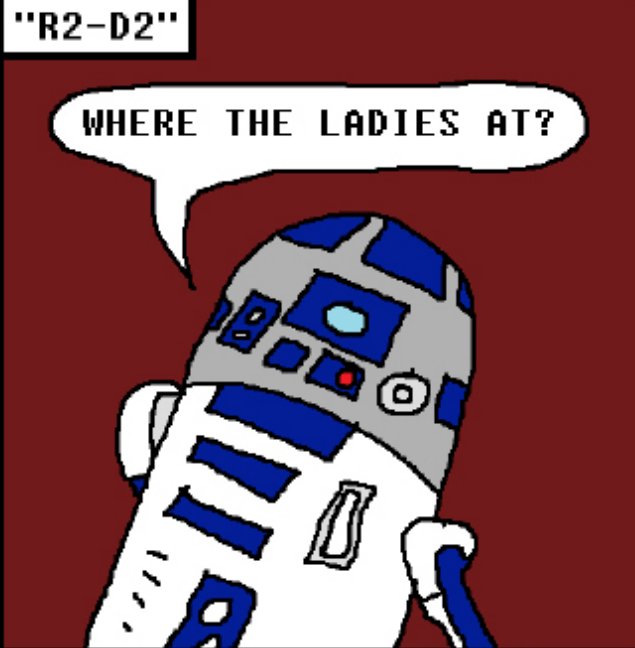
*January 31, 2013
Women’s Basketball
vs. Occidental
7:30 PM*

CELEBRATING TWO LONG YEARS OF MEDIOCRITY

BY DAVID GINOLA

APPROXIMATELY TWO YEARS AGO TODAY, A "PRETTY FUNNY" COMIC INVOLVING LUIGI IN A BEE SUIT WAS SUBMITTED TO, REJECTED BY, AND THEN PRINTED IN THE TECH. THE REST IS HISTORY.

TO COMMEMORATE THIS ANNIVERSARY, HERE ARE FRAMES FROM REAL COMICS DEEMED TOO DANGEROUS FOR PUBLICATION.



Bonus comic on page 4!

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

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