

JEREMY

SYDNEY UNIVERSITY PHYSICS SOCIETY / APRIL 2009 / MID-SEMESTER BLUES

Theorie Boys Back... with Big Bang

The nineteen eighties sensation "Theorie Boys" (right) re-united last week for a single sold out concert in Slade Lecture Theatre.

The much anticipated concert came eight years after the group split in 2001, and was well received by the general public and critics alike. One fan said he even sold his original Russian copy of Lifschitz and Landau, "квантовая механика" to pay for his tickets.

The group performed many of their hits, including: 'Mode coupling due to twisting of magnetic field lines', 'Particle acceleration and nonthermal radiation in space plasmas', and 'Electromagnetic localization in one-dimensional stacks with random loss and gain'. Unlike some of McPhedran's side project's gigs, no-one in the front row fell asleep.

Speculation has grown over whether a world tour will ensue, but thus far, no comment has been made by the group or their management. – **S.M.**



pic: H.D.

Four Jeremies M.I.A.

Police are investigating the mysterious disappearances of the last four issues of the Jeremy. The newsletters, rumoured to contain the most incisive journalism ever seen under the Jeremy masthead, were intended to be published over the first half of semester.

"Aw man, forget about it. I was gettin ready to hit 'Print', and they just

vanished! Scram!" said Sahand Mahmoodian, one of Jeremy's editors.

The prime suspect in this heinous crime against the physics newsletter-reading community is former editor Ben Fulcher, who last year fled the country with the contents of Jeremy's bank account, and a good proportion of its creative juices. – **F.L.**



PIRACY ON THE HIGH TEAS: Forget the straits off the west coast of Africa – what depravity is happening in our very own tea room? Page 4.



IT'S WAR: Tension rises between CUDOS and Complex Systems. Peter Robinson: "They may have high-powered lasers, but we have the brains." Page 5.



HOT COFFEE: Our tour of brewspace continues on Pages 2 and 3, while bafflement and outrage still simmer over last edition's cover image. Did no-one in Physics play the 'mini-games' in GTA?!

A Traveller's Guide to Brewspace: A Review of Coffee In and Around The School of Physics

IN THIS, THE SECOND CUP OF A TWO PART SERIES, WE EXPLORE THE SCHOOL OF PHYSICS' NEIGHBOURHOOD FOR THE OPTIMAL POINTS IN BREWSpace. IN THIS ISSUE, WE REVIEW THE **FLAT WHITE AND MOCHA** COFFEES OFFERED BY SIX REPUTABLE ESTABLISHMENTS.

Last time we heard from two coffee experts – B.F., master cappuccino-order¹; and S.D., an espresso-shooting marksman². In this issue we meet our final pair of researchers.

By day, he's a physicist. By night, he's still a physicist. And on weekends he still does physics. But what this guy is missing in the life-department, he makes up for with his spudwaffling elocutionary powers and supercharged taste buds. He is the flattest of whites. He is: F.L.

You may not have heard of our Mocha judge, but if you've ever set foot in the physics building then chances are you've heard him. Drumma, co-host of hit Sydney Uni Radio Group show *Bottom of the Barrel*, and the owner of quite possibly the loudest voice in the southern hemisphere, is our final expert S.M.

We now briefly recap-(puccino) our methodology. Every possible coffee experience occupies a point in brewspace. Our four judges enter a coffee establishment and each order their designated coffee. They then measure their experience on three criteria, essentially projecting least-squares style onto a three dimensional subspace of brewspace.

The first basis vector is $\hat{e}_1$ **ambience**. It's the vibe. The second, $\hat{e}_2$, is

foreplay – what goes on before you stick anything in your mouth. The final and most widely studied basis vector, $\hat{e}_3$, is **orally stimulated and associated sensations**, which is B.F.-ese for “taste”. It is hoped that this three dimensional subspace provides a sufficiently good approximation to brewspace such that our results may be a useful guide to the would-be caffeinated.

By popular request (no kidding!), we first print all four judges' log book entries concerning their visit to the

Carslaw coffee cart:

S.D.: Many readers no doubt have fond memories of a quick dash to the Carslaw coffee cart to soothe their ragged nerves before a nasty exam. I once gave this tactic a try; ninety feverish, panicked minutes later and I swore never to buy a coffee from them again. So it was with some trepidation that I approached the cart. The service was terrible – the attendant spitefully chatted away on her phone for five minutes before serving us. The coffee filled up half of a large polystyrene mug, not a good thing when dealing with espressos. The liquid itself looked a bit watery and most striking of all, it had no smell. The texture of the coffee was thin and watery and the flavour could be summed up as bitter, with not even a hint of a coffee flavour.

B.F.: Terrible music forms standing waves in this Carslaw concrete jungle. However, we are out in the open amongst students, and everyone loves students, right? Unfortunately the coffee had poor aroma, a long waiting time, paper cups, but good temperature. Orally it was reasonable – a sweetish taste and a little

weak, but it does resemble coffee and it's nice enough to pour down your throat.

F.L.: This was the only café surveyed that had its own water feature. Which was filthy. There's no turn off like being ignored for two minutes by someone chatting on their phone, while Boss Hogg points his hot dog at your face. Well, the coffee tasted better than the barista's face looked, but that's not saying much.

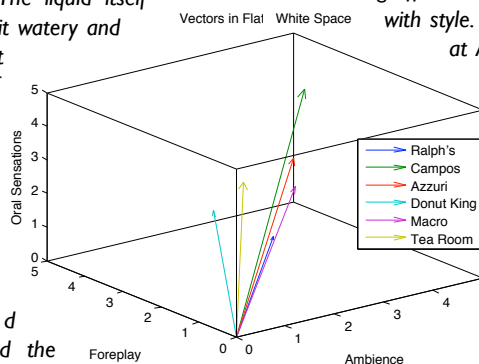
S.M.: “Boss Hogs, Australia's best Hotdogs!” A brave claim made by the Carslaw coffee cart. Unfortunately for my E.Coli count, I didn't get a chance to test this claim out. The taste of the coffee cart mocha wasn't too bad... that said, it wasn't anything special. The coffee here really just serves it's designated purpose of waking up hungover students prior to morning lectures, or preventing that afternoon Thai panang curry coma.

Next we wander across the footbridge, into the bowels of Wentworth and the highly reputed

Azzuri's:

S.M.: Hidden away on the bottom floor of the Wentworth building Azzuri coffee has a reputation of serving the best coffee on campus. Dim lighting, comfy couches and graffiti chic walls prepare patrons for coffee with style. The mocha serving is generous at Azzuri and has a decent scent, however it is incorrectly served in a mug rather than a clear cup. The chocolate froth and the slightly bitter top section of the mocha indicate that there is a good mixture of chocolate and coffee, however the drink lacks inhomogeneity in coffee and chocolate concentration. That said, Azzuri's mocha lives up to expectations and provides a good “chill out” beverage.

F.L.: It seemed like Azzuri's was going for an artsy vibe, but some of the decor is inconsistent with this (as is its location in Wentworth). It was a bit of a mess, chairs stacked in random locations, and this certainly doesn't match the artsy vibe. Still, tucked away in a comfy couch under the stairs, I felt like I was in Café Womb, and that's gotta be a good thing. Relaxed service, the barista is serving people rather



1 You should see him order a ‘cappuccin-io’ without giggling.

2 Not once has he missed his face.

(continued on next page)

than pushing a product. The coffee art was good, there was a little aroma, but the foreplay was let down by the lack of table service. The taste was pleasant throughout, though perhaps a little weak.

Our researchers then sampled the toroidal wonderland that is **Donut King**, also in Wentworth:

S.M.: Drugs, neon lights, people in pink. It's not Kings Cross or Oxford street, it's Wentworth Building's Donut King (DK) just across from the university pharmacy. Here, the smell of cinnamon adds a hint of ambience, however the pink confetti theme in addition to the massive donut posters isn't a plus for non LSD users. The mocha's foam had a nice body to it but was a bit too thin. The beverage started nicely but the lack of chocolate/coffee inhomogeneity made the mocha boring to finish. However, surprisingly for DK the drink was not revolting. All in all the DK mocha is a satisfactory drink adding positively to an ambienceless experience.

F.L.: The fast-food ambience was as expected. Noisy, with pictures of sprinkled donuts on the wall big enough to make any donut-lover look small, and with ugly, ugly tables and crockery, this is not somewhere you come for the vibe. Foreplay was short and perfunctory. Like a visit to a cut-rate hooker, you're not here for affection, you're not here for fancy service: you have a need and you are willing to pay someone to slake it with a minimum of fuss. But this coffee was the dark horse of the survey. The flat white was sweet at first, and surprisingly flavoursome, although the coffee lacked texture. Disturbingly, the milk near the bottom of the cup tasted sour.

Our intrepid team, always keen on defiling their own nest, returned home and tasted the delights of the **School of Physics Tea Room**:

F.L.: The tea room has a friendly vibe, although the incredulous looks that we received as the barista (S.D.) frothed my milk were a little off-putting. For foreplay, there's nothing like a bit of D.I.Y. self-love to get me in the mood. It's the attention to detail – I warmed my favourite mug with boiling water, and poured exquisite abstract coffee art. The crema on the espresso was white rather than brown, but this disturbing trait was overlooked as we were not in a position to judge this factor at other establishments. Through the milky froth I could faintly detect the occasional whiff of coffee, which was rather unpleasant. A hint of cockroach could be detected in the background, but the overall impression was one of milky, diluted gruel. I admit that this coffee was a surprisingly pleasant experience. But it

was not pleasant enough to pay for and had I the choice I would have preferred to drink tea made from someone else's toenails (also available in the tea room).

S.M.: In terms of a coffee experience, much is to be said about the physics tea room ambience, both good and bad! For example tea time ambience has a friendly vibe where one can discuss things like the Dirac algebra and not be scoffed at. On the other hand, the tea room is known for its high crime rate as villainous mug/apple/silver spoon/juice thieves lurk in the shadows. But this isn't an issue if patrons remain vigilant. My attempts at making a mocha from the tea room coffee machine (and ground up chocolate chip biscuits) were futile. Points are added however for the cockroach infused coffee bean blend.

Seeking an alternative taste, our bean-freaks trekked to **Macro's Wholefoods Market** on King St:

S.M.: I must admit that I really don't care for beetroot chips and organically grown lentils; or that whole pretentious vegan vibe that runs rampant at Macro's. Macro's ambience is a poor attempt at cool. The coffee was a little too cool (mean kinetic energy wise), but it consisted of a nice mixture of chocolate coffee which possessed a slight bitter aftertaste. A good beverage, but no fancy effects such as layering or inhomogeneity.

F.L.: Without a laptop, I felt left out. The free wireless and organic goods attracts nerd hippies, yet strangely there were no Mac users. Most people were sitting quietly by themselves, as the bland jangly alt.rock was drowned out by the King St traffic. The walls are lined by feel-good eco hippy shit, and together with the computerised cash register, I felt like I was sitting in Coles. This hippy café definitely don't waste water on washing the cups, mine was quite dirty. The coffee was pretty weak – so milky that I could taste the hairy milk-maid gently caressing the free-range cow's udder as she apologised to the cow for stealing its gland-juice.

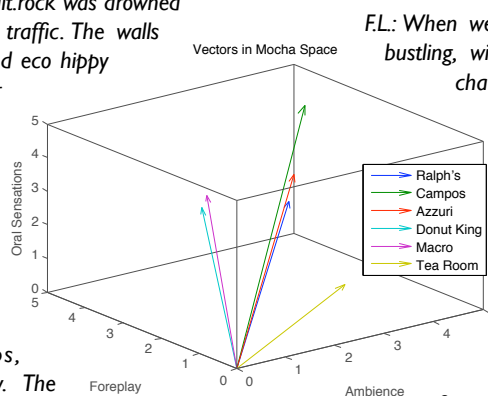
Penultimately our possé visited **Ralph's café**, the well-known purveyor of fine foods:

F.L.: Ah, Ralphs. The usual shitty music, the wonky tables and crappy chairs, the bellows of the barista competing with the screams from

the TV. Still, the happy chatter of students does a lot to redeem the vibe. My coffee had that trademark Ralph's chunky texture – it's a true "chew 'n' spew". I've come to realise that Ralph's is an onomatopoeic name for the place. Like a Guinness, cutlery would be useful here. At least the coffee has a bit of flavour to it – not a great one, but a flavour nonetheless. Enjoy it before the aftertaste hits. In Ralph's there is a laminated sign that says "Life's too short to drink bad coffee". I think it's there to taunt us.

S.M.: Ralph's cafe is frequented by some of the school of physics most esteemed members. It has a student vibe which is near, if not at, most students resonant frequency. Dirty couches and shabby tables detract from the ambience, but the ability to sit outside and stare across the oval is a nice addition. Fans of Al Pacino and Desmond Tutu will probably enjoy the ambience more than others. The foreplay at Ralph's is let down by the fact one must stand near the counter until one hears, "Mocha to have here!". Ralph's also gets the mocha etiquette correct and serves the drink in a glass, however no spoon is provided if one wishes to stir. The scent of coffee is all but imaginary and the foam looks nice but has no artwork. The mocha at Ralph's was a good temperature, however the coffee needs to be served with a knife and fork because the foam is very, very thick. The taste of the mocha is satisfactory, although there could be a bit more chocolate in the drink rather than just on the foam.

Finally the research group visited **Campos**, on Missenden Road:



F.L.: When we visited, Campos was bustling, with youthful bourgeois chattering drowning out piano jazz. Coffee implements line the wall, and a roaster sits in the corner. As we walked in, we were confronted with the smell of freshly ground coffee. Everything fits, its vibe is the epitome of

what it tries to be. The coffee art was impeccable, but my handle was a little sticky due to a hastily poured espresso shot. My flat white was creamy, but was the strongest coffee of the survey. The coffee slipped between my lips like a live goldfish, and vanished before I was sated. But slowly, the viscous liquid slid down my oesophagus and over the next minute or two I was filled with an inner warmth, and my experience was complete.

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Tea-Time Looting

Recently there have been a number of complaints regarding the breaking of physics tea time etiquette. Reports have emerged of offenders taking two or even up to three biscuits at the commencement of tea time and in extreme cases not even remaining to socialise.

Article 25a of The School of Physics rulebook strictly stipulates that "...Only a single biscuit may be consumed by each attendee between 11:00 and 11:20 am, whence, a second serving of biscuit(s) may be taken." It goes on to say, "Each consumed biscuit warrants a minimum of 5 minutes of socialising, while a cup of tea requires 10."

An amendment introduced by senior tea time officials, becoming law on May 1, implements new, tougher penalties on tea time looters including compulsory attendance of all Plasma/Applied research seminars, a ban on tea time attendance for up to 6 months and forced recitation of all equations in Melrose and McPhedran. – **S.M.**

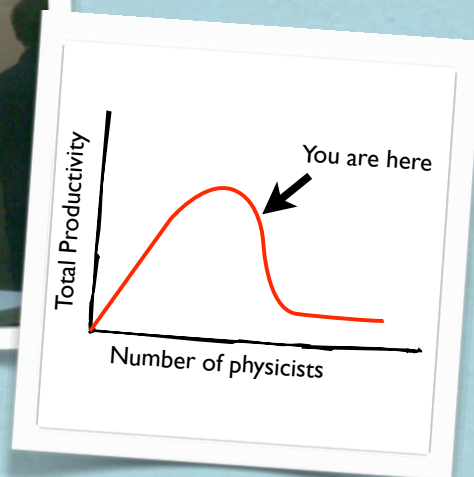
SPACE RACE

An influx of new school of physics staff and postgraduate students has lead to an increase in demand for space. The increase in numbers has forced staff to move into already overcrowded offices, while some have had to improvise to find office space. The federal opposition has linked the

overcrowding to a recent boost in the number of boats arriving off the coast of northern Australia, but a government spokesperson ignored the allegations, merely restating the government's commitment to the higher education sector with its \$43 billion investment package.



✱ **ENGAGED IN WORK:** Lack of office space has led to some physicists being assigned 'temporary' offices.



FOR ANY FIXED AREA of office space, at first adding physicists to the department increases its research output. Then, at a certain brain-density, research output peaks. Above this critical density, productivity collapses and the only remaining output is from telecommuters.

JEREMY NEEDS YOU! Might a cryptic crossword describe you as a "pen"? Does your passion for physics play a harmonious (or anharmonic - we're open minded) duet with your love for the print medium? Contribute! jeremy@physics.usyd.edu.au

Traveller's Guide to Brewspace

(continued from page 3)

S.M.: As soon as one enters Campos, the smooth jazz ambience gets one ready for the foreplay and orally stimulated and associated sensations of the mocha. Cool coffee photos, coffee paraphernalia and wooden tables add to the ambience. In fact everything in Campos is ambient, even the grinding of the coffee beans. The service is reasonably quick and one is soon presented with a mocha possessing a "forget about it!" scent of coffee. The thickness of the foam is perfect and is sculpted with elaborate foam art matching the Campos logo. Naturally, mocha etiquette is followed and one is presented with stylish cutlery and crockery. The Campos mocha starts like a conventional latté, but becomes more chocolate infused as one reaches the bottom, which is really how a mocha should be. In fact, all the right boxes are ticked when it comes to the Campos mocha: anisotropy, inhomogeneity, Lipschitz continuity. A great experience for all mocha drinkers.

Our researchers tabulated their results, expressed as a vector $[\hat{e}_1, \hat{e}_2, \hat{e}_3]$ in the brewspace subspace:

	Flat White	Mocha
Carlaw	[1.5, 1, 2.5]	[2.5, 2, 2.5]
Azzuri's	[4, 3.5, 3]	[4, 3.5, 3.5]
Donut King	[1, 2, 3]	[1.5, 3, 3.5]
Tea Room	[4, 5, 1.5]	[4, 2, 0.5]
Macro's	[2.5, 1.5, 3.5]	[2, 3.5, 3.5]
Ralph's	[2, 1.5, 2]	[3.5, 3, 3]
Campos	[5, 4.5, 4.5]	[5, 4.5, 5]
	Cappuccino	Espresso
Carlaw	[1.5, 1, 2.5]	[1.5, 1, 2.5]

Next issue, in the third and final installment of this two part series, we analyze the data using several metrics, to find out whose bean reigns supreme. – **F.L., S.M.**

Ask Jeremy

Dear ?Jeremy?,

I'm not entirely sure what the "Jeremy wants YOU!" email is about, but it sounds interesting. Explaining QM? What do I have to do?

Regards,
Benjamin Pope

Dear ?Benjamin?,

¡Ola! In case your questioning tone when writing my name was genuine and not an artifact of this university's glorious Horde IMP webmail service, first we should reassure you that yes, this newsletter is indeed the Jeremy. So you've addressed your query correctly, which is a good start. Most of our contributors mistype our email address and end up published in SciSoc's Aqua Regia, an embarrassing mistake (the misaddressing, that is, not the Aqua). Jeremy is Physoc's newsletter and as such publishes stuff by physics students (e.g. you). Submit an article, essay, poem, or other printable item and we will publish it. Cheers,
Jeremy

CUDOS declares war on Complex Systems

Two School of Physics research groups, CUDOS and Complex Systems (CS), are now officially at war following laser sniping attacks from CUDOS student offices across the Physics car park earlier this week. The struggle, described by some observers as “reminiscent of the story of Cain and Abel”, brings to a sorry end diplomatic efforts to resolve the many differences between the two groups. While claiming responsibility for the attacks, CUDOS spokesman Lieutenant Colonel William Corcoran sought to outline his case for the unprovoked action. “We see this as an unfortunate last resort. For months, we have taken issue with the superior air conditioning of Complex Systems. This is on top of the gross inequalities in colour printing facilities”, he said. In comments that can only serve to inflame the situation, he added that “recently, we have had to put up with intentional reflecting of



light off their windows every morning, leading to severe glare off our computer monitors. Using our own phenomenon against us adds insult to injury”. L. Colonel dismissed CS claims that the reflections are from a third party (alleged to be Astro) as “propaganda”, adding: “we’ve done the time reversal calculations, we know where the light came from.” Meanwhile, a CS spokesman warned “that this unprovoked attack will not go unpunished. This war is about nothing more than sign envy. They’re just jealous of our professionally produced sign. It

hangs there, taunting them across the footbridge every time they go to the bathroom or tearoom. Jealousy does not justify conflict of this type.” UN Secretary-General Ban Ki-Moon called for restraint from both parties, noting also that “the sad thing is, they’re so alike in so many ways. Both headed by Federation Fellows, both essentially solving ODEs... it’s tragic.” A no-walk zone has been declared in the car park and footbridge, and peacekeepers from Plasma and High Energy are due within the next ten days.

– H.D.

School of Physics Death Ray Delayed Again

Technicians have reported that the SOP DeathRay will not be operational for at least another 8 months, throwing another spanner in the works of Head of School Anne Green’s revolutionary new funding lobbying strategy, “Fund Physics or Perish Painfully”. The DeathRay (pictured right during a prototype demonstration) is understood to have

been delayed by senior academic staff wasting valuable DeathRay development time on such frivolities as drinking tea, eating biscuits and reading student newsletters. – H.D.



pic: W.C.

Puzzle Corner

See how many equations of four or more symbols you can make from the symbols shown in the grid. The equation must contain the centre symbol and there must be at least one nine-symbol equation on the list. No trivial equations or verb forms ending in ‘s’.

∇	$\times$	$\epsilon(\mathbf{r})$
$=$	$\mathbf{E}(\mathbf{r})$	∇
$\times$	$\mathbf{E}(\mathbf{r})$	k_0^2