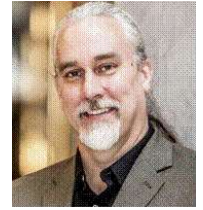


Welcome to 2018

It has been a hectic start to 2018 for FLEET.

Around 30 FLEET members and affiliates have been in Canberra for the 2018 ANU Summer School on Topological Matter – a great opportunity to hear from leading experts from around the world. I learned a lot from the Summer School talks and I'm sure all the young researchers did too. We report on the school below.



Our operations team has been busy with our first annual report. There will be a resulting steady 'overflow' of interesting Centre stories to the website and social media.

The energy use of computation has hit the mainstream news in the last couple of months, with estimates that Bitcoin's electricity load is equivalent to that of Peru, or Ireland, or New Zealand. This is an important wake-up call, which highlights our Centre's mission.

Read on for news on outreach, networking and educational opportunities, and FLEET research news.

Regards,

Michael Fuhrer

Director

ARC Centre of Excellence in Future Low-Energy Electronics Technologies

Outreach competition and gathering ideas

Inspire kids to connect with FLEET-relevant science

Stretch your brain – picture your science a different way

Competition: design a science display FLEET is partnering with Melbourne's science museum Scienceworks to display science concepts in a new exhibit "Beyond Perception", using a competition among FLEET members to narrow down the options. Entries don't have to be specifically target FLEET research, but should be relatable. For example, displays might touch on topology, quantum effects, transistors, ICT energy use, or the Lorentz force that drives the Hall effect.



Lab based activities We're seeking input to help build a 'bank' of activities that can be performed by students visiting FLEET labs. [Send us](#) your ideas and plans to be shared among FLEET members and affiliates. For inspiration, check out these [biology pracs](#).

Get animated A challenge of quantum and atomic physics is making our research 'visual', so we're seeking concepts for animations that explain key FLEET science. Again we'd love to hear your [suggestions and ideas](#).

Topological summer school

Around 30 FLEET members and affiliates attended the ANU's [Topological Matter summer school](#) earlier this month, with graduates and undergrads discovering topological materials and their applications to photonics, ultra-cold systems and quantum computation.



Nobel Laureate Duncan Haldane (pictured right) was the workshop's headline presenter, describing the study of topological materials that saw him named co-recipient of the 2016 Nobel Prize in Physics.

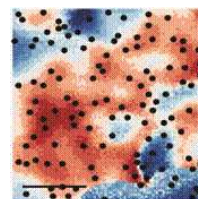
FLEET's Elena Ostrovskaya (ANU) and Jeff Davis (Swinburne) helped organise the workshop, while Michael Fuhrer, Dimi Culcer (UNSW), Qiaoliang Bao (Monash) and PIs Victor Gurarie (University of Colorado) and Victor Galitski (Maryland) presented talks.

Co-sponsorship by the US Embassy in Canberra introduced an international cooperation element, and public events included a topological [physics in the pub](#), and a talk by Duncan Haldane. We'll share videos of the talks when they're published.

Catch Michael Fuhrer talking about the ANU workshop on ABC radio.

News from around the Centre

[Electronically smooth '3D graphene'](#) A recent FLEET study was widely covered online, including at [Elsevier's Materials Today](#) and [Phys.org](#). The Monash University and Yale-NUS collaboration found that the topological material Na_3Bi could be made to be as 'electronically smooth' as the highest-quality graphene alternative



[Research centres share best practice](#) Operations staff from 18 ARC-funded centres met in Melbourne last month to share best practice and learnings, and to develop future networks among similar roles. How do centres become 'greater than the sum of the parts'? What strategies have professional staff found to enhance centre cohesiveness? What works with respect to managing KPIs? What doesn't work?

More news:

- [Wolfgang Ketterle talks](#)
- [Spin, electron-correlation discussion at Gordon Godfrey, UNSW](#)
- [Funding success in ARC November round](#)
- [AIP visits FLEET Monash](#)
- [10-year-old spin mystery resolved at UNSW](#)
- [Older news](#)

FLEET scholarship

"I love working in FLEET because it challenges me all the time, and because it has deepened my understanding in an essential topic to the progress of technology. "

Jessica Alves (shown here on the right) at Monash University Engineering is the recipient of FLEET's first Women in FLEET Honours Scholarship, so we asked her a few questions about her research project with FLEET.



[Read her answers](#), and her science at FLEET, on the website.

Opportunities

[CSIRO's Active Integrated Matter open day](#) at the MCG is an opportunity to network with CSIRO researchers, industry and academics to discuss science, science policy and innovation, Melbourne 22 February. [Registrations vital](#).

[Australian Nanotechnology Network \(ANN\)](#) funding for members to travel to Australian National Fabrication Facility nodes. Open for postgraduate nanotech students and ECRs currently studying/working in Australia who are members of ANN.

[FameLab](#) coaches early career scientists to tell the story of their research quickly and effectively. Love talking science? Or want to get more practice telling the story of your research? Applications close February 16.

Can you describe your science to a teenager? Quantum challenges scientists to rewrite a published quantum paper so it's understandable by secondary students. anyone game to try their hand at BECs, QAHE, or other FLEET-relevant quantum science?

Refraction Media hosts a catchup for scientists and other science-passionate professionals in Sydney. A good opportunity for networking, sharing ideas for STEM outreach, and exploring collaborations.

Pitch it clever Pitch your science in a 1–2 min video to a vice-chancellor, politician or business leader. there's \$4500 prize +money to be won, and great exposure even if you don't win. Submissions close Feb 12.

FLEET representing at international science conferences

FLEET will be well represented at a number of science conferences around Australia/NZ in the coming months.

ICONN 2018 The International Conference on Nanoscience and Nanotechnology will bring scientists and policymakers to Wollongong 29 January – 2 February. FLEET is one of six ARC Centres of Excellence showcasing nanoscience and nanotech research at ICONN 2018.



UNSW
SYDNEY

UNSW-SSF-18 The Summer School on Ferroelectrics at UNSW 5–9 February will focus on fundamental ferroelectric science as well as cutting edge research and emerging applications, allowing young FLEET researchers to learn the ropes and build networks with the wider Asia-Pacific ferroelectric community.

The **Finite Temperature Non-equilibrium Superfluid Systems** workshop in Wanaka, NZ will include presentations by a numbers of FLEET researchers across cold-atom science and exciton-polariton condensation.

Did we miss anything? If so, let **Errol** know. Also see the **What's on calendar** on the intranet – additions welcome!

Helping spread FLEET news

If you're on **Facebook**, **Twitter** or **Linkedin**, we would love it if you followed our accounts and shared our posts, particularly with other colleagues in the field. If a friend or colleague might be interested in our news, [click here to send them an invite](#). Or let us know and we'll invite them.

If you have been forwarded this email, you can subscribe to future editions by [clicking here](#).

Participating organisations

FLEET's participating nodes are: the Australian National University, Monash University, RMIT University, Swinburne University of Technology, the University of New South Wales, the University of Queensland and the University of Wollongong.



FLEET is: The Australian Research Council Centre of Excellence in Future Low-Energy Electronics Technologies.