

Press release: Scotland's space expertise key to gravitational waves study

The UK, through the work of the University of Glasgow's Institute for Gravitational Research and the Science and Technology Facilities Council's UK Astronomy Technology Centre (UK ATC) in Edinburgh, will develop the optical benches for the European Space Agency's LISA mission (Laser Interferometer Space Antenna). These optical benches are at the core of the laser interferometry measurement system, the key technology needed to detect gravitational waves.

The space observatory, planned for launch in the 2030s, will allow scientists to study these mysterious waves, improving our knowledge of the beginning, evolution and structure of the Universe. It will build on the success the LISA Pathfinder mission, which in 2016 successfully demonstrated the technology needed for LISA. It will also build on work already taking place here on Earth where UK researchers, including from STFC and the University of Glasgow, are contributing to the ongoing LIGO project that made the first detection of gravitational waves in 2015.

Chris Lee, Head of Space Science at the UK Space Agency, said:

"The University of Glasgow has a worldwide reputation for gravitational waves research, with the pioneering work of Professor Ron Drever in the 1960s leading to the Nobel Prize-winning detection of the waves in 2015. This new funding ensures this legacy continues with the LISA mission, alongside crucial technology innovation from the UK ATC in Edinburgh. Scotland is yet again at the heart of UK space activity."

The detection of gravitational waves in 2015 marked the start of a new era in astronomy. First predicted by Albert Einstein a century ago, these tiny ripples in the fabric of space-time are generated by cataclysmic events like the merger of black holes or neutron stars and offer an entirely new way to study the Universe.

Dr Ewan Fitzsimons, who was part of the team at the University of Glasgow which developed the LISA Pathfinder optical bench and is now leading the LISA team at STFC's UK ATC, said:

"It's a very interesting time right now – the amazing science that LIGO has enabled is showing us the potential of gravitational wave astronomy to revolutionise our understanding of the Universe. In addition, the success of the LISA Pathfinder mission, and now the commencement of work on LISA with UK participation has been excellent news.

"This UK Space Agency investment will ensure that UK scientists are centrally involved in developing and utilising one of the most exciting and significant

astronomy projects of the next few decades.”

Dr Harry Ward, who leads the University of Glasgow’s LISA team, said:

“The funding announced today sets the Glasgow and UK ATC teams firmly on the road to playing a leading role in a mission that promises to provide dramatically new insights into the nature and evolution of the Universe.

“After working very hard for over 15 years to bring LISA Pathfinder to such a successful conclusion, we are very happy indeed to be so strongly supported to take the crucial next step towards LISA. This commitment from the UK Space Agency will ensure that UK technology will lie at the heart of the most revolutionary astronomy mission of the next 20 years.”

Gravitational waves can be studied from space, away from ground-based ‘noise’ and measured over vast distances. LISA will be able to observe new sources invisible to the ground based gravitational wave observatories like LIGO. The LISA mission will study these gravitational waves using three spacecraft flying in a triangular configuration, separated from each other by a distance of 2.5 million km. At the heart of each spacecraft will be an interferometer.

These interferometers fire laser beams between each satellite, using them to measure tiny fluctuations in the distance between the spacecraft, which arises when a gravitational wave passes by. Although the waves are generated by massive, violent events, they are miniscule and the interferometers must measure these tiny squeezes and stretches of the light beams to a few trillionths of a metre.

To support this the optical components of the interferometer must be arranged on an innovative optical bench that is thermally and mechanically isolated from any other effects apart from gravitational waves.

The team at the University of Glasgow designed and built the optical bench for LISA Pathfinder with funding from the UK Space Agency and STFC, supported in the early development phase by STFC’s RAL Space. The LISA Pathfinder mission, which launched in 2015 and ended in 2017, successfully showed that two test masses at the heart of the spacecraft could be put into a state of virtual free fall in space, under the influence of gravity alone and unperturbed by other external forces, with a precision more than five times better than originally required. The Glasgow team will build on this world-leading experience to develop the optical benches for LISA.

LISA Pathfinder only used one optical bench, which the Glasgow team built by hand, while LISA will be more complex and on a larger scale, requiring up to 12 benches. STFC’s UK Astronomy Technology Centre will partner with the University of Glasgow to develop the robotic ultra-precision technology required and lead the overall design and build of the LISA optical benches. This technology will be developed specifically for LISA, but the work of the UK ATC facility in this area is expected to be of considerable interest to UK optics and photonics companies once the robotic technology is proved.

The first optical bench is due to be delivered to ESA around 2030.

[Press release: Veterans to retain military ID, allowing easier access to services](#)

The move will allow veterans to maintain their emotional connection with the armed forces, allowing them to keep the card they have carried on them throughout their career. Retaining their ID card, known as the MOD Form 90, will also allow service leavers to be identified as veterans quickly and easily, aiding their transition into civilian life.

Charities, Veterans UK, which manages armed forces pensions and compensation payments, local authorities and GPs will all benefit from the change, as they will not have to conduct time-consuming checks to identify individual veterans.

The Prime Minister last year also announced plans to provide the 2.5 million former armed forces personnel cards which identify them as veterans, in recognition of their service to the nation.

Minister for Defence People and Veterans Tobias Ellwood said:

Our armed forces give their all to keep this country safe and leaving the military can be an emotional time.

That's why I'm delighted that people leaving the armed forces will be able to retain that emotional connection with their service by keeping their ID card. Retaining their ID card will also make it easier for veterans to access the many public services which prioritise veterans under the Armed Forces Covenant.

So this is a small change that I know will make a big difference.

Handing back the Service ID card has regularly been identified as something that members of the armed forces would like to change.

Instead of handing back their card to be destroyed on the day of discharge, the corners will now be cut off to show the card is no longer valid. This will ensure that security is maintained at bases and other sensitive sites.

Chief of Defence People Lieutenant General Richard Nugee said:

Time and time again, I have heard from service leavers that handing back their ID card is one of the hardest things to do as they leave the forces.

Leaving the military is an emotionally charged moment and I hope that this change will ease some of those feelings by reinforcing the message to our veterans that they remain a valued member of the armed forces community.

The MOD is conducting a major cross-government review of veterans policy and provision, which will inform a new veterans strategy and will be released in the autumn.

Part of this involves ensuring greater recognition of veterans so they can efficiently access government and third sector support and allowing retention of the MOD Form 90 ID is the beginning of this. The Ministry of Defence is reviewing a range of other identification options and will make a further announcement later this year.

Service leaver Col David Madden said:

My ID card is more than just a piece of plastic with my photo on, it signifies my service and marks my time in the Armed Forces. Whilst it might seem like something small, keeping my card will make a practical difference by allowing me to verify my service to my GP surgery and local authority.

[Press release: Foreign Secretary Boris Johnson meeting with Chief Executive of Afghanistan Dr Abdullah Abdullah](#)

FCO spokesman said:

The Foreign Secretary today [7 June] hosted Dr Abdullah Abdullah, Chief Executive of Afghanistan, for talks at the Foreign and Commonwealth Office. The Foreign Secretary reiterated UK commitment to Afghanistan and support for a sustainable Afghan-owned and Afghan-led peace process with the Taliban. They discussed today's announcement by President Ghani on a temporary ceasefire over Eid al-Fitr and the progress that had been made in Afghanistan since

2001, particularly in the fields of human rights and girls' education, while acknowledging that challenges remained.

They discussed Afghanistan-Pakistan relations and the importance of building trust between the two sides in support of lasting peace in Afghanistan. They also discussed the upcoming Afghan parliamentary and presidential elections. Dr Abdullah raised his concerns about the impact on Afghanistan of sanctions on Iran.

Finally, the Foreign Secretary urged Afghanistan to attend the special conference of States Parties to the Chemical Weapons Convention taking place on 26-27 June as a clear signal of the global commitment to uphold the global ban on chemical weapons.

Further information

- Follow the Foreign Secretary on Twitter [@BorisJohnson](#) and [Facebook](#)
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[News story: Government extends Public Lending Right scheme to ebook authors](#)

From July 1, the Public Lending Right Scheme will cover ebooks and e-audiobooks that are loaned from public libraries across Great Britain. The change means that authors are eligible for payment in the same way if their works are borrowed electronically or as physical books.

E-lending in public libraries has risen dramatically in the past six years. Last year more than 6,750,000 works were borrowed electronically, compared to just 750,000 in 2011/12.

The UK is one of the first countries to extend its library lending compensation scheme to remote e-lending.

Libraries Minister Michael Ellis said: "We want to help our libraries thrive in the digital age.

"This legislation fulfils a manifesto commitment and recognises the exciting increase in e-lending. By extending the scheme we are ensuring authors are properly compensated as the ebook industry continues to grow into the future."

Tom Holland, chair of the PLR Advisory Committee, said: "It is excellent news that the Government is backing a PLR fit for the 21st century. This will be hugely to the benefit of authors, who are fully aware that printed books these days are not the only way of reaching their readers."

The Public Lending Right scheme is managed by the British Library on behalf of the Government, with more than £6 million of payments made to 22,000 authors, illustrators, photographers, translators and rights holders each year.

[Speech: An enduring home for German investment](#)

It's a rare treat to share a dinner with people who love Germany like me.

It's been more than 3 decades since the first time I moved to Berlin, when I spent the best part of a year working in a variety of student roles: in Sommerbad Kreuzberg, in McDonalds and in the Kaufhaus des Westens.

It was a perfect time to be in West Berlin, in the late 1980's: a chance to see a unique environment and a soon-to-become unique opportunity to visit the old Eastern Bloc, as an impressionable 19-year-old.

These days, it's a long way for a 19-year-old to travel to Pyongyang, Havana or Caracas.

But I digress. Returning to Germany, I've now got a German wife and 2 half-German children, and I still speak a lot of German at home – which is lucky, as I'll be in Hamburg later this month giving a German-language speech!

So I'd like to thank our hosts tonight for the work they do to strengthen Anglo-German relations.

And I'd like to thank everyone here, as trade and business are at the heart of that relation. And that means you – you're the ones who trade; I just facilitate you trading.

And you do trade a lot – £50 billion worth of British exports go to Germany. More than half as much again comes the other way – in fact, Germany's trade surplus with the UK has increased by 75% in just 5 years.

But I know some of you are worried about the future: that maybe, after Brexit, Britain and Germany won't be so close, and investing and trading won't be so easy.

Well I'd like to offer you some reassurance. I can promise you that, regardless of Brexit, the UK will remain one of the most business-friendly places on earth.

There's a lot of governments who, frankly, are starting to take business and free markets for granted.

We don't and we won't.

We're independently ranked seventh in the world for ease of doing business. That's something we're proud of, and it didn't happen overnight – it comes from decades of business-friendly policies.

And I am certain that once we leave the European Union, British businesses will still have good access to the German market, and vice versa.

We've already made progress – on citizens' rights, the budget, the transition period, on third-party trade agreements. And soon we'll be publishing a Brexit White Paper – that's precisely to give more clarity and therefore more certainty.

Yes there are areas of difficulty like the Irish border, and yes sometimes the devil is in the detail.

But I think back to when I worked in finance, in New York and London. Many business deals I traded on involved haggling on detail. And if I'd have interpreted every difficulty to mean the deal would be called off I'd have lost the shirt off my back.

Let's take a cool look instead, at the facts.

Fact 1: a good deal is in everyone's interest. On the day we leave we'll become, overnight, the EU's second-largest export market – only slightly behind the US, but well ahead of China, Japan, or Russia.

Fact 2: this will be the only trade deal in history where the 2 sides start from a position of regulatory alignment. That's a unique advantage, and in technical terms makes the agreement much more straightforward.

Fact 3: we've already reached agreement in a lot of places. Over three-quarters of the draft withdrawal text is coloured green – and much of the

rest is agreed in principle.

That bodes well for a future trade agreement, too. It's easy to take what's agreed for granted and focus on what isn't – easy, but misleading.

Finally, Fact 4: this isn't just about mutual self-interest. The EU and the UK are and will remain close partners.

A couple of weeks ago I was at an EU Trade Ministers' Council. We are getting close to signing trade agreements with Singapore and Japan.

And Britain supported that – more trade is good for everyone, and we'll continue to engage constructively while we're a member state.

As the recent US tariffs have shown, those of us who do believe in the global free-trading system have a shared interest in upholding it – and that means showing leadership by approaching our own trade negotiations constructively.

Right at the heart of that partnership is the bilateral relation between Britain and Germany – Europe's 2 largest economies, and 2 of its most business-friendly.

That's a relationship we should cherish. So I'm really glad to be here tonight to celebrate it with you all.