



Name: Armando Trapala

Job: PhD Student-Researcher at University College Cork-Tyndall National Institute

What Do You Do? I work with tiny light sources called quantum dots, which could be very important for building quantum computers. My research focusses on making these devices shine brighter and work better for this purpose.



Armando

What Three Words Would You Use To Describe Yourself? Passionate, adventurer, creative.

What Is The Best Thing About What You Do? You never get bored! Every day brings the chance for a new adventure through the mysteries of physics. There's always something different to explore or a fresh idea to wrap your head around. In a sentence: you're always confused, but never about the same thing, and I find that absolutely fascinating!

What Are The People You Work With Like? All of them are kind people with a deep love for science, they're hard workers with a strong spirit.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would shrink myself (and become Ant-Man)! If I shrink myself, I would be able to explore the microscopical world; the quantum world, and "watch it directly with my eyes".

What Tiny Thing Do You Want To Be Able To See, And Why? I would like to see what is inside of the very smallest particles we are made of (e.g. quarks) and see whether string theory is correct or not.



Name: Bryony Lanigan

Job: PhD Student at Imperial College, London

What Do You Do? I trap atoms using laser light and use those atoms to as sensors to find new forces.

Hobbies: Music, Word/Logic Puzzles, Board Games, Climbing

What Inspired You To Choose Your Job? I love asking questions, and as a researcher, that gets to be my job!

What Is The Best Thing About What You Do? I love how collaborative experimental physics is. You all work together to solve problems and everyone has little bits of knowledge or experience that they contribute to figuring it out.

Is Your Job Hard Or Dangerous Or Fun? My job isn't very dangerous, so long as I follow proper safety precautions, but I do work with lasers that could burn skin if I'm not careful!

What Are The People You Work With Like? In a word, lovely. A lot of us like solving puzzles and word games in our spare time, and so we often have fun just talking out problems or puzzles, be they physics or otherwise! We're a lot more social than non-physicists might expect.

What Tiny Thing Do You Want To Be Able To See, And Why? I'd love to see dark energy. We don't know if it exists, or even if it's actually a tiny thing we can see, but that's what my recent research has been looking for.





Name: Dr Caterina Minelli

Job: Metrologist – a scientist that specialises in measurements, at the National Physical Laboratory

What Do You Do? I measure very small things, like nano-particles and even nano-diamonds! I want to know how big they are, what they are made of, what is inside them and what is on their surface. I work with clever people that use these particles to make exciting products, like medicines you take only once in your life to heal or phone screens with really bright colours. We have an apple tree in the garden of the National Physical Laboratory that was planted from a branch of Isaac Newton's! You can see that behind me in the photo.



Caterina

Hobbies: Sewing new clothes for me and my family, teaching others to sew, walking in nature.

How Did You Get To Where You Are Now? With a lot of curiosity and resilience, and a great sense of adventure! I did not plan every move of my career, I took jobs that let me work abroad (I worked in 4 different countries!), sometimes choosing life experiences over my career. I don't easily give up and when setbacks occur, I pause and then start again.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would love to shrink and see the nanoscopic world. I am worried though that bugs like bacteria and viruses will look like monstrous dinosaurs!



Name: Daisy Shearer

Job: Quantum Computing Outreach and Education Lead at the National Quantum Computing Centre

What Do You Do? I help people learn about quantum computing and how to use it through education and public engagement.

What Three Words Would You Use To Describe Yourself? Passionate, Creative, Curious.

How Did You Get To Where You Are Now? I studied physics at university and then started a PhD in experimental physics because I thought I wanted to be a physics researcher. I wanted to share the cool physics I was doing with my friends and family, so I started an Instagram page to explain what I was doing in the laboratory. To my surprise, this page gained over 18,000 followers! When a job came up at the National Quantum Computing Centre where I could combine my technical background with my passion for education and public engagement, I jumped at the opportunity, as I realised that academic research wasn't quite right for me.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would shrink a quantum computing lab because quantum computers require lots of big machines like supercool fridges and laser systems. I would then be able to show it to lots more people.

What Is Your Big Question About Tiny Physics? How do we develop quantum computers to benefit everyone's lives?



Daisy



Name: David Lussey

Job: Quantum Materials Inventor at
Quantum Technology Supersensors

What Do You Do? I design smart materials based on quantum science to create different types of sensors. My sensors don't need much energy and are very sensitive, they can even be used for things like printable 'skin' to help robots "feel" what they're touching.

Hobbies: Reading, Gardening and Inventing

What Is The Best Thing About What You Do? I love seeing my materials used in lots of places! Our sensors are affordable and printable like T-shirt designs, making wearable tech smarter. In gaming, you could have a glove instead of a controller. In sports, sensors on a cyclist's vest could monitor air movement, or on football socks, they could detect exactly what is going on with a tackle... and now you can understand why I still get excited doing this job!

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would love to shrink myself to the size of an atom, to see what's happening at the quantum level. But then I would need a force field to protect me from being hit by an electron that has escaped from its atom. Now I need to think about how I could create an extremely small personal force field to protect myself... hmm...



David



Name: Ellen Devereux

Job: Quantum Computing Consultant at Fujitsu

What Do You Do? Help people learn to use new types of computers called quantum computers and research new ways they can be used.

What Three Words Would You Use To Describe Yourself?
Busy, Enthusiastic, Loyal

How Did You Get To Where You Are Now?

Following the opportunities that sounded most interesting, hard work and some luck.

What Is The Best Thing About What You Do? I get to learn about lots of different people's jobs when I help them to use quantum computers in their jobs.

If You Could Use A Shrinking Machine, What Would You Shrink And Why?

Myself, I often think it would be lovely to be small enough to fit in someone's pocket. I could be cosy and see what they do with their day.

What Tiny Thing Do You Want To Be Able To See, And Why? I'd love to see how the brain works, all the tiny cells talking to each other.

What Is Your Big Question About Tiny Physics? How does tiny physics interact with gravity?



Ellen



Name: Hannah Seabrook

Job: PhD researcher at University of Bristol

What Do You Do? I study quantum physics, which explores how things behave when they get incredibly small, which often defy our everyday expectations. My work focuses on understanding these properties of quantum systems and finding ways to use them for groundbreaking technologies, such as new kinds of computers.

Hobbies: Hiking, Board Games, Dancing

What Inspired You To Choose Your Job? I really enjoyed learning and solving the mysteries of physics, but I also wanted to have an impact on society. I chose this job because I can combine my passion for discovering new physics, whilst contributing to everyday lives.

What Is The Best Thing About What You Do? I have the freedom to investigate some really cool things that I am curious about, and constantly keep learning.

What Tiny Thing Do You Want To Be Able To See, And Why? Gravitons which are theoretical particles that help make gravity work. We don't know yet if they exist or not, but if they do, it could help answer one of the biggest questions in science: how does gravity work in the quantum world? It would tell us how big objects like planets and tiny objects like atoms are related to each other.



Hannah



Name: Jodie Renaud

Job: I work in Quantum Metrology as a Scientist at the National Physical Laboratory

What Do You Do? I work with electrons, the tiny particles that make up electricity. We design special chips, the kind that make computers and electric devices work, not the ones you eat! These chips move one electron at a time, meaning we can do experiments that help us understand how different materials work and what we might be able to use them for.

Hobbies: Piano, Baking, Crochet, Reading

How Did You Get To Where You Are Now? When I left school, I didn't have the right subjects or grades to go to university, but I wanted to study Physics! I found out about foundation years which taught me everything I needed to go to university. I did a project on quantum dots which led me to my job!

Is Your Job Hard Or Dangerous Or Fun? I had to learn a lot very quickly when I started my job! But I had a great team who were very patient and taught me everything I needed to know. Sometimes we use liquid nitrogen or liquid helium which can be dangerous, but we do lots of training, so we know how to keep ourselves and each other safe. And yes, it's very fun!

What Is Your Big Question About Tiny Physics? I wonder what it would be like to be something really tiny.



Jodie



Name: Josephine Charnley

Job: CEO of Quantum Technology Supersensors

What Do You Do?: All sorts of things! No two days are the same. In a small quantum start-up company you have to be good at doing lots of different tasks.

Hobbies: Walking, Reading, Art and spending time with friends visiting new places.



Josephine

How Did You Get To Where You Are Now?

I have always loved science and did physics, chemistry and maths at college before going on to do law because I also enjoyed problem solving. I then became a mum and went on to work in technology, finally co-founding a quantum materials technology company - Quantum Technology Supersensors (QTSS for short!).

What Are The People You Work With Like? The people I work with are very inspiring and passionate about what they do and we all help each other.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would shrink myself along with my dog Ferdi. I'd make him even smaller though so that he could fit in my pocket, which would mean that I could take him with me to explore the quantum world as he is always happy and makes me laugh a lot!



Name: Kirsten Christensen-Jeffries

Job: Research Fellow at King's College London

What Do You Do? I make images of the inside of the body using bubbles and sound! The images I create are of the tiniest blood vessels. I do this by flowing tiny bubbles in the blood, and hitting them with sound waves – called ultra-sound. The bubbles vibrate and create huge sound waves that we can see! By making these super-clear images, doctors can see what is going on in different parts of your body! Seeing where more, or less, blood is travelling can help doctors find diseases and then try to make people better.

Hobbies: Pottery, Nature, Crafts, Gardening and Yoga.

How Did You Get To Where You Are Now? At school, I was very shy and I didn't think I was very good at most subjects at school, but I was lucky enough to meet very encouraging and inspiring teachers. They gave me the confidence to keep learning Physics and taught me how Physics can be used to make a difference in the world.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? My cats, so I could take them about with me wherever I go!



Kirsten



Name: Dr Laura Clark

Job: Royal Society University Research Fellow
at the University of York

What Do You Do? I lead a team of physics researchers, towards understanding what makes materials work at the atomic scale.

What Three Words Would You Use To Describe Yourself? Inquisitive, Stubborn, and Enthusiastic

What Is The Best Thing About What You Do?

When you learn something new - before anyone else has found it out yet

Is Your Job Hard Or Dangerous Or Fun? Dangerous - not when we follow our safety plans for working with things like X-rays, sharp objects and very cold materials. Hard and fun? Yes - often both at the same time.

What Are The People You Work With Like? I work with a very varied bunch of people - in one day last week I spoke with local colleagues, then folks in Spain, then the US, then Japan - all working together towards a shared goal.

What Tiny Thing Do You Want To Be Able To See, And Why? I want to be able to see all of the tiny things! My main goal is to make better electron microscopes so we can look at the atoms in all materials - from hard things like gold and ceramics, to very soft and mobile materials like proteins or bits of leaves.



Laura



Name: Dr Maddison Coke

Job: Senior Technical Specialist at the University of Manchester

What Do You Do? I make new materials for the next generation of computers, to do this we need to make them on the small nanoscale. By taking single atoms, the building blocks that everything is made of, and putting them in precise places we can use them as switches and sensors.

Hobbies: Walking in nature with my wife, cycling around the UK and playing with my dog.

What Inspired You To Choose Your Job? I always loved science and doing experiments, so I chose a job where I get to do experiments most days. Although most of my experiments are done through a big screen, it's very rewarding being able to solve problems and create new materials.

Is Your Job Hard Or Dangerous Or Fun? Very fun – I get to talk to people all over the world, solve problems and sometimes draw tiny pictures in materials.

What Tiny Thing Do You Want To Be Able To See, And Why? I put down atoms one at a time, but it's really difficult to find them again! I would love to be able to see the atoms clearly.

What Is Your Big Question About Tiny Physics? How can we design new materials atom by atom to make them do new and interesting physics?



Maddison



Name: María Gragera Garcés

Job: PhD Researcher at the Quantum Software Lab
(Someone who learns and discovers new things!)

What Do You Do: I explore how we can make super-smart quantum computers talk to each other and work as a team.

Hobbies: Crochet (I love making things with yarn!), Reading, and Playing Video Games.

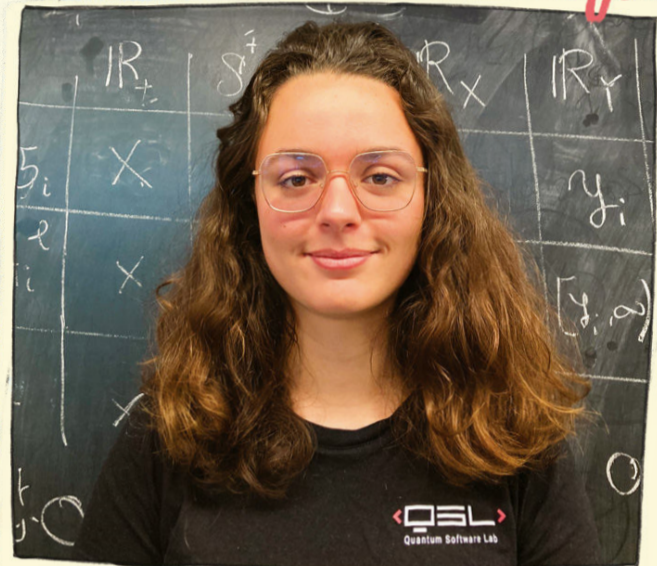
What Is The Best Thing About What You Do?

I get to solve puzzles with other scientists from all around the world! We talk, share food, and work together to figure out how the tiniest parts of our world behave.

What Are The People You Work With Like? They're all very different. Some used to be musicians or gardeners before becoming scientists. We bring our own ideas and work together. Anyone can be a scientist, really!

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I'd shrink my dirty dishes into a tiny box, so I don't have to clean them!

What Tiny Thing Do You Want To Be Able To See, And Why? A Qubit! They're the tiniest pieces of a quantum computer. But there's a twist: if you look at them too closely, they change. Like a super shy particle playing hide and seek, and I'd love to join in!



María



Name: Dr Mary Richardson-Slipper

Job: Postdoctoral researcher in experimental particle physics

What Do You Do? I use the Large Hadron Collider in Geneva, Switzerland to study particles called "beauty" quarks. I also look for tiny differences between matter, and its opposite, antimatter.



Mary

What Three Words Would You Use To Describe Yourself?
Inquisitive, Strong, Cheerful

Is Your Job Hard Or Dangerous Or Fun? My job is tricky, but very fun. I do not always know the right way to solve a problem, and I might be faced with a task I do not know how to do, but it is so much fun to figure it out. There is no better feeling than getting to the answer of a tricky problem!

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would like to shrink myself so I could explore tiny places and experience the world around me in a different way!

What Tiny Thing Do You Want To Be Able To See, And Why? I wish I could see the particles coming from the Large Hadron Collider with my own eyes! We know that they are there because they leave clues in our very fancy particle detectors, but it would be amazing if we could see them with our eyes!



Name: Dr Rachel Clark

Job: Postdoctoral research associate at the University of Bristol

What Do You Do? I'm an experimental physicist testing nano-scale devices that are smaller than a human hair! They can make and measure a special kind of light known as "quantum light" and we use them in advanced computers and sensors.



Rachel

Hobbies: Puzzles, video games, writing quiz questions for competitions.

What Is The Best Thing About What You Do? The best thing about what I do is learning new science every single day and keeping up with the state-of-the-art technology.

Is Your Job Hard Or Dangerous Or Fun? Sometimes it can be hard if you are stuck on a problem for a while, and some lab equipment like high powered lasers or scary chemicals can be dangerous. But most of the time, it is definitely a lot of fun.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? I would love to be able to shrink myself so I could walk around on my devices and see what they look like up close! This would be really helpful when I'm trying to figure out why they're not working too...



Name: Professor Rachel Edwards

Job: Professor of Physics at the University of Warwick

What Do You Do? I invent new ways of using ultrasound to make the world safer. I measure how sound bounces off different objects to find problems like cracks in railway tracks. It's a bit like looking for babies using ultrasound, but we look at how we can solve problems in industry and the outside world.



Rachel

Hobbies: Sewing, juggling, running around after my two small kids

How Did You Get To Where You Are Now? Some luck, some hard work. I've moved countries and research topics, spending some time in the US, the Netherlands, and the UK, working with different types of waves and magnets.

What Is The Best Thing About What You Do? I love the variety - some days I am teaching our students about different bits of physics, other days I'm working in the lab designing and building experiments, and other times I get to travel and talk to people about what we do.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? Firstly, I would slightly shrink my office and lab furniture so I could reach things more easily! (I'm quite tiny). Then, I would shrink all the electronics and sensors that we build, to see if we could put them into much smaller structures and look for even tinier defects!





Name: Dr Ryan Hill

Job: Medical Physics Research Fellow at the University of Nottingham and Founder of Cerca Magnetics Ltd

What Do You Do? Your brain is a complicated set of electrical circuits that produce magnetic fields. I use quantum sensors to measure this field to find out how the brain works which helps us understand what goes wrong in illnesses like epilepsy or dementia.

What Three Words Would You Use To Describe Yourself? Curious, Creative, Supportive

How Did You Get To Where You Are Now? At school, I never thought being a scientist was something I could do so I didn't even consider going to university! However, I really enjoyed learning about science, so my teachers encouraged me to study physics. One summer, I did an internship working on a brand-new brain imaging technology and I enjoyed it so much that I carried on the work in my PhD and it's now my full-time job.

What Inspired You To Choose Your Job? During my PhD I got to work on the cutting-edge of neuroimaging and I saw my projects eventually being used by scientists around the world to help people. Being able to continue doing that as a job was a "no-brainer"!

What Tiny Thing Do You Want To Be Able To See, And Why? Atoms and the particles that make them up to see what is happening inside an atom.



Ryan



The University of
Nottingham

UNITED KINGDOM · CHINA · MALAYSIA



Name: Sarah Sweeney

Job: Physics Student at University College Cork and Science Communicator

Three Words To Describe Myself:

Whimsical, Tenacious, Passionate

How Did You Get To Where You Are Now? I have always wanted to understand the universe, which has led me to get a degree in Astrophysics. At the start of lockdown, I made a TikTok account and started sharing new things I learned in physics. To my surprise, lots of other people wanted to follow along!

What Is The Best Thing About What You Do? I love to get messages from people who have benefitted from my content in some way! Often, I feel like I'm posting into the void, so it makes a huge difference to know that I can help people.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? Myself!! Usually, I study tiny physics using something called a scanning tunnelling microscope (STM). It lets us take pictures of atoms, which is so wild to think about! I would love to get in there myself and look at the atoms first hand, to see what's going on.

What Tiny Thing Would You Want To See, And Why? Going even smaller, I want to see electrons, and how they move. I've spent about a year studying superconductors, which are a funny type of material where electrons "buddy up" into pairs and move in weird ways. We don't completely understand what they're doing just yet. I'd like to get in there and get my hands dirty!



Sarah



Name: Dr Thomas Hird

Job: Assistant Professor in Quantum Technologies

What Do You Do? Lots! I have three different parts to my job. First is research, where I do experiments leading a group investigating light-atom interfaces in Quantum Technologies. Secondly, I teach students at university. Lastly is communicating science and improving access and outreach across STEM.



Thomas

What Three Words Would You Use To Describe Yourself? Thoughtful, Kind, and Curious

Is Your Job Hard Or Dangerous Or Fun? It feels like all three, at times. Not really dangerous, despite the high-power lasers, it is very safe with many layers of safety precautions and training. And yes, it's hard doing research no one else has done before, but it's also really great fun, solving problems no one has solved before.

If You Could Use A Shrinking Machine, What Would You Shrink And Why? Some of our most sensitive experiments like LIGO, the Extremely Large Telescope and the Large Hadron Collider are enormous. If you could shrink them and keep their sensitivity, then the experiments would be much easier!

What Is Your Big Question About Tiny Physics? Why doesn't gravity work when things get really really small? This is one of the biggest physics questions we have right now, with some incredibly exciting experiments looking at investigating it.



UNIVERSITY OF
BIRMINGHAM



Name: Torin Gibbons

Job: Graduate Scientist in Quantum Information at the National Physical Laboratory

What Do You Do? I perform measurements on Quantum Encryption devices. These use the smallest possible pieces of light (photons) to create a key with which we can share information securely. In the lab we use lasers and single photon detectors to make measurements such that we can trust these devices.



Torin

What Three Words Would You Use To Describe Yourself? Sociable, Optimistic, Curious

What Inspired You To Choose Your Job? I always thought Quantum was scary and steered mostly clear. Until my final year of university, where I took a project on creating entanglement – mainly because I thought it sounded cool. I know I want to continue to learn, but I also love getting to be hands on in contributing to science.

What Tiny Thing Do You Want To Be Able To See, And Why? When a single particle meets two slits, it passes through both at the same time. But whenever we try to look at which slit it goes through, it only goes through one. I would like to observe the particle without it knowing. Do you think it would pass through both still?