



**Welcome to the RSE@Schools Talks Programme - a series of FREE, curriculum-linked talks for schools across Scotland, available at any point throughout the school year.**

### Speakers

All of our talks are by experts, keen to enthuse and excite students from P6 to S6, on a wide range of subjects from biology, astronomy and physics to literature, culture and the arts.

Many of our speakers are willing to work with the teachers, to tailor their talks to fit with class curriculums, and to different age groups and class sizes.

### Free to schools

The talks are FREE to schools! The RSE will cover all speakers' costs, including travel and accommodation. All the school needs to provide is a venue for the talk and, of course, the audience! Teachers are also asked to supervise pupils during talks and provide some feedback afterwards.

### Talks Programme

In this programme you will get a flavour of some of the speakers we have available, along with their lecture topics. If, however, there is something in particular you would like a speaker for, just get in touch and we will endeavour to find a speaker to suit.





# Speakers and Talks Programme

Speaker	Topic	Talk Title and Description
Professor Jeremy Smith FRSE	English and Literature	<b><i>Scots and English - Two Languages, Two Dialects</i></b> Scots is at the heart of many current debates on language and identity in present-day Scotland. But is Scots a language, or is it a dialect of English? What is the difference between Scots and Scottish Standard English? Is there one form of Scots or many? Where did Scots come from? These are some of the questions addressed in this talk.
Professor Jeremy Smith FRSE	English and Literature	<b><i>Dee-Dum Dee-Dum: Patterns in Poetry</i></b> Why is poetry different from prose? This workshop is concerned in particular with the study of patterns in verse, and ranges from the study of metre, onomatopoeia and phonaesthesia to issues of typographical presentation (as manifested in concrete poetry). We will be working with a set of poems presented in facsimiles dating (roughly) from their time of composition, ranging in date from the Anglo-Saxon period to the present day.
Dr Elspeth Jajdelska	English and Literature	<b><i>Literature and the Science of the Brain</i></b> Why might some classic novels seem hard to read nowadays? The new science of reading can help us answer this and other questions about literature. Is it really true that attention spans for books are shorter than in the past? How do the bestsellers of one century turn into the neglected classics of the next? And can understanding cognitive science help to breath new life into the Scottish classics?
Dr Pauline MacKay	English and Literature	<b><i>Who is Robert Burns?</i></b> This talk will consider who Robert Burns was as a man and a poet, and what Robert Burns is now; a Scottish cultural icon, and a global phenomenon. Young people will share their own knowledge and ideas about the national bard, his work, and what he represents for them as individuals. Later they will consider Robert Burns in the context of Scotland and Scottish culture. The talk will conclude with an examination of how the ideas presented, along with the views communicated by the students, have been influential in shaping the global perception of Robert Burns, Scotland and Scottish culture. This presentation/discussion will be propelled by poetry, song and images, all of which will be used to communicate different ideas and representations of the national bard. Teachers who include Robert Burns' poetry as part of their curriculum are welcome to identify certain works or areas of the poet's life that they would like to be specifically addressed.

Speaker	Topic	Talk Title and Description
Professor James Chalmers	Law/Politics	<p><b><i>What Should be a Criminal Offence, Why, and Who Decides? – New for 2014</i></b></p> <p>Governments constantly decide to create new criminal offences, some of which can give rise to considerable controversy. Is it, for example, justifiable to use the criminal law in ways that restricts what people can do with their own bodies or in their own homes, what people can say, or how parents can raise their children? This talk will explore how we decide and justify on what the criminal law should be.</p>
Dr Nicola Stanley-Wall	Biology	<p><b><i>Bacteria Live in Communities</i></b></p> <p>Find out about the fantastic biofilm communities bacteria can form and the ways in which this has an impact on our life. Be prepared to go home and want to clean your teeth very well!</p>
Professor Roy Burdon FRSE	Biology	<p><b><i>The Suffering Gene</i></b></p> <p>This talk will explain what science knows about how our genes are adversely affected by the modern environment. Ironically, these environmental adversities are mainly the result of the unintended consequences of the very industrial revolution and modern technologies that have transformed our lives in many positive ways. The talk will illustrate how our bodies defend themselves from external attack and what the consequences are if these defences are overwhelmed. In conclusion, more cautionary approaches to the development of new technologies, industrial processes, products and foodstuffs will be discussed.</p>
Dr Francisca Mutapi	Health and Education	<p><b><i>Parasites and Performance - How Worms Damage African Children – New for 2014</i></b></p> <p>Find out about a parasitic worm as ancient as Egyptian mummies, and as sly as a fox which affect billions of people worldwide. Although these parasites occur in mostly poor areas in the developing world, you will hear about some very famous British people who have been infected by these parasites during their recent visits to Africa. Discover how they affect all aspects of children's health, ranging from diminishing the children's ability to concentrate in class perform during school tests and physical activities, to the detrimental effects on the function of their bladders and livers. This talk will explain how we are treating millions of children in Africa who are affected by these parasites and what differences it is making to their health and school performance</p>
Professor Roy Burdon FRSE	Science & Art	<p><b><i>Art meets Science – Science meets Art</i></b></p> <p>This talk will explore how scientists and artists can each be viewed as explorers and how, throughout, history diverse artists, architects, engineers and scientists have shared interests and insights. The key questions that will be answered are: How has science informed art? How has art informed science?</p>

Speaker	Topic	Talk Title and Description
Ms Alison McLure <b>Not available in June</b>	Physics	<p><b><i>Antarctica (You Can Go Far With Physics!)</i></b></p> <p>The Antarctic is a remarkable continent – remote, hostile and uninhabited. Yet it is of key importance to our understanding of how the world works. For the early explorers, Antarctica was the ultimate survival contest. For scientists, it remains a place of intellectual challenge. Find out what kind of science is carried out in the Antarctic. Meet a physicist and meteorologist and find out how a physics degree took her to Antarctica and what life there was like.</p>
Ms Alison McLure <b>Not available in June</b>	Physics	<p><b><i>The Science and Art of Weather Forecasting</i></b></p> <p>The weather affects us all and is a particularly British obsession. Find out from a meteorologist how weather forecasts are prepared and the art involved in presenting them. This talk can cover any aspects of weather the teacher wishes to cover.</p>
Ms Alison McLure <b>Not available in June</b>	Physics	<p><b><i>Arctic Islands of Science</i></b></p> <p>Svalbard, far to Norway's Arctic north, is an island group with glaciers, fjords, reindeer and seabirds and also scientific research, Alison McLure, back from her second scientific expedition, shows images of landscape and wildlife in a sometimes bleak yet breathtakingly beautiful setting. Also, find out what science projects are carried out in such a far flung place.</p> <p>Alison is also willing to provide talks on careers in physics.</p>
Ms Alison McLure <b>Not available in June</b>	Physics	<p><b><i>Science: It's a People Thing: a Discussion Workshop for Girls – New for 2014</i></b></p> <p>The workshop was piloted at the Big Bang Science Fair in London in March 2013. The girls discussed myths and facts about girls and women in STEM careers, and came up with ideas on how to make a lasting difference. The Institute of Physics has worked in partnership with WISE and Intel to create this workshop, designed to inspire girls about the STEM subjects where they are under-represented, such as physics and computer science. It shows them how these subjects connect with issues that girls care about and their importance as a gateway into a wide range of interesting jobs and careers. The workshop uses role models to facilitate small group discussion and explore gender stereotyping in a comfortable and safe environment. The session is suitable for girls aged 13–16, but could be easily adapted for use with a younger age group aged 11–12. The resources include all that is needed to run a session of either 60–90 minutes, or a longer half-day event. The pack is for teachers, as well as ambassadors and role models going into schools. It includes advice on how to find role models and brief them, as well as editable PowerPoint slides to use in the workshop</p>

Speaker	Topic	Talk Title and Description
Professor Miles Padgett FRSE	Physics	<p><b><i>Does God Play Dice?</i></b></p> <p>In 1905, Einstein published three articles that changed our understanding of the world forever. He explained how Brownian motion proved the world was made of atoms; he understood how the fixed speed of light led to special relativity; and, finally (for which he won the Nobel Prize), that light itself came in particles. The particles of light led to the development of quantum mechanics, an understanding of how nature works at the most fundamental level. However, there were subtle aspects of quantum mechanics that caused Einstein concern, leading to his quote that “God does not play dice with nature”. This concern has been debated for nearly 100 years, but experiments in the last 20 years have shed new light on the problem.</p>
Dr Sabrina Malpede	Physics	<p><b><i>How Does a Sailboat Sail?</i></b></p> <p>A talk and demonstration on the aerodynamics and hydrodynamics involved in sailing with very simple tools. Dr Malpede will demonstrate important developments in sail design throughout history.</p>
Mr Rory O’ Riordan	Physics	<p><b><i>Wasted Heat: Why not Build a Solar Farm?</i></b></p> <p>This talk covers the energy available from the Sun’s heat and light, and explains the difference between photo-voltaic solar panels that can be used to make electricity and solar water panels that make hot water. A section of this talk also deals with the storage of energy in cells and batteries for later electricity generation, and explores the properties of the tanks used for hot water storage. In addition, the active ‘demonstrations’ will be tailored to the age group and are designed to last about 40 minutes.</p> <p>Mr O’Riordan also offers a range of other talks which explore the following topics: Sustainability, climate change, energy conservation, building services engineering, global warming, synoptic weather forecasting and many more.</p> <p>For further details on these talks please email Events Officer Rachel Steele on <a href="mailto:rsteele@royalsoced.org.uk">rsteele@royalsoced.org.uk</a></p>
Professor Adam McBride FRSE	Maths	<p><b><i>Big is Beautiful</i></b></p> <p>This talk might be described as an excursion into the world of very large numbers. More precisely, we shall meet some rather large positive integers, which have cropped up recently in a variety of mathematical problems. Magic Squares, Sudoku, secret codes and a dodgy chip all make an appearance.</p>

Speaker	Topic	Talk Title and Description
Professor Adam McBride FRSE	Maths	<p><b><i>Maths is Best</i></b></p> <p>The last 30 years have been a Golden Age for Mathematics. Old problems have finally been solved after hundreds of years, whilst many new areas have sprung up in response to the needs of other disciplines. The subject can reasonably be described as the language of modern business, engineering, science and technology (BEST). This talk will try to justify this claim, but will also include results that are simply elegant and beautiful. No specialist knowledge is required.</p>
Dr Patrick Harkness	Space Systems Engineering	<p><b><i>What Goes Up – New for 2014</i></b></p> <p>We are used to the idea of gravity simply attracting objects towards the Earth, but it also has some rather surprising effects in space. Gravitational forces are at least partially responsible for the Earth’s ocean tides, volcanism on Jupiter’s moons, and the stability of Saturn’s spectacular ring system. In fact, we can even exploit gravitational forces to accelerate spacecraft away from the Sun through manoeuvres called gravitational slingshots. This talk, with some accessible demonstrations involving bouncing ‘planets’, will show how all these different effects arise from one single relationship proposed by Isaac Newton many hundreds of years ago.</p>
Dr Pam Anderson	Space Systems Engineering	<p><b><i>Follow your curiosity – New for 2014</i></b></p> <p>A summary of my career experiences to date, including a short description of my PhD research and time spent at NASA’s Jet Propulsion Laboratory (JPL). This talk outlines the difference between space science and engineering and details possible means of obtaining space science data from an engineering perspective, including planetary fly-bys, orbiters and landers. Aspects of the Curiosity Mars Rover mission are shared; specifically, my experience watching the Curiosity landing at JPL.</p>
Dr Pam Anderson	Space Systems Engineering	<p><b><i>Space Spin-Offs and Orbits – New for 2014</i></b></p> <p>Students are supplied with a range of items and are asked to decide which products they think have stemmed from space and why. This is followed by a group discussion on the invention of each product and their use in space. Information is also provided on spacecraft orbits to provide various applications.</p>

Speaker	Topic	Talk Title and Description
Professor Henry Ellington	Philosophy of Science	<p><b><i>The Conflict Between Science and Religion</i></b></p> <p>In this talk, suitable for S5/S6 and also for adults, Professor Ellington will discuss the concepts of non-overlapping and overlapping magisteria and will argue that science and religion are covered by the latter, so that conflict can occur between them if the teachings of religion are falsified by the findings of Science. He will then examine some specific areas in which such conflicts have arisen, including the on-going disagreement between evolutionary biologists and religious fundamentalists. The talk is supported by a PowerPoint presentation. Ample time for discussion of the issues raised is included.</p>
Professor Henry Ellington	Philosophy of Science/ Astronomy	<p><b><i>The Goldilocks Effect – New for 2014</i></b></p> <p>It is now generally recognised that the laws of physics and the basic constants that are built into them appear to have been specially designed in order to enable life to develop. In the universe. Scientists and philosophers describe this as the ‘Goldilocks Effect’, since the laws and constants seem to be ‘just right’ for this to happen. In this presentation (which can take the form of a straightforward talk lasting one hour or an interactive seminar lasting roughly two hours), Professor Ellington will describe the Goldilocks effect in detail and try to answer the basic question of why the universe is such a bio-friendly place.</p>
Professor Henry Ellington	Astronomy	<p><b><i>A Guided Tour of the Universe</i></b></p> <p>In this talk, you will be taken on a guided tour of the observable Universe. We will begin by visiting the inner planets and the Sun, journeying to the centre of the latter to see how it produces the energy that keeps us all alive by ‘burning’ hydrogen. We will then visit the outer planets of the Solar System and see how they differ from our Earth. The tour will then extend to visit our nearest stars, more remote regions of our Galaxy, other local galaxies and the furthest regions of the extra-galactic Universe. The tour will be copiously illustrated with PowerPoint images.</p>
Professor John Brown FRSE	Astronomy	<p><b><i>Black Holes and White Rabbits</i></b></p> <p>Of all the amazing things in the Universe, black holes are the most bizarre. These objects range from the tiny ones formed just after the Big Bang to the supermassive ones in the centres of galaxies, whilst the best known are those formed when massive stars die. Questions about what black holes are, how they come to exist, how we observe them, and what they do to the world around them, are answered and illustrated by conjuring techniques.</p>

<b>Speaker</b>	<b>Topic</b>	<b>Talk Title and Description</b>
Dr Giles Hammond	Astronomy	<p><b><i>Gravity: It's the Law</i></b></p> <p>It is a surprising fact that the gravitational force is the least well understood of the fundamental forces of nature. The constant which determines its strength, the Newtonian constant of Gravitation G, is the least precisely measured of the physical constants. This is a result of the weakness of gravity and the measurement challenge. In this talk, we will explore our current understanding of gravity, including Newtonian gravity and General Relativity. We will look at precision measurements of gravity and the curious effect that all bodies fall with the same acceleration in a gravitational field. We will further look in detail at the generation of "gravitational waves" from the acceleration of massive objects such as neutron stars and black holes, and the possibility of a Quantum Theory of gravity.</p>
Dr Giles Hammond	Astronomy	<p><b><i>The Dark Side of the Universe</i></b></p> <p>In this talk we will explore the mysteries of the Universe. Building from the concepts of measuring the distance to faint galaxies and the Doppler shift of light, we will look in detail at the current observations that indicate that over 95% of Universe is made up of a strange form of matter called Dark Matter and Dark Energy. The ultimate fate of the Universe will also be discussed, including current observations that suggest the expansion rate is accelerating, and its implications for our understanding of cosmology and particle physics.</p>
Professor Martin Hendry FRSE	Astronomy	<p>Professor Hendry can provide a wide range of talks on astronomy and astrophysics including:</p> <ul style="list-style-type: none"> <li>• <b><i>Probing Einstein's Universe with Gravitational Waves</i></b></li> <li>• <b><i>Exploring the Dark Side of the Universe</i></b></li> <li>• <b><i>2020 Vision: The Future of Astronomical Observations</i></b></li> </ul> <p>For further details on these talks please email Events Officer Rachel Steele on <a href="mailto:rsteale@royalsoced.org.uk">rsteale@royalsoced.org.uk</a></p>

**If you would like to invite one of the RSE@School Speakers to your school, enquire about other topics or find out more information about our speakers then please contact:**

**Rachel Steele, Events Officer, RSE@Schools Talks  
e.[rsteale@royalsoced.org.uk](mailto:rsteale@royalsoced.org.uk) or t.0131 240 5035.**

**Alternatively, if you know which speaker/ topic you would like, please complete and return the enclosed Schools Talks Application Form**



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CONTACT PHONE NUMBER	SCHOOL	EXTENSION (if applicable)
1st CHOICE SPEAKER/TOPIC		
2nd CHOICE SPEAKER/TOPIC		
3rd CHOICE SPEAKER/TOPIC		
POTENTIAL DATES FOR TALK		

Please return to:

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