The Particle at the End of the Universe

By Sean Carroll

Oneworld

Paperback: £9.99

brilliant in his latest book, Sean Carroll, author of the

Hardback: £16.99

Oneworld

July/August 2013

particle can act as a portal for exploring as

When Carroll gets into his stride

in space or time but rather its location in

the major discovery at CERN on 4 July 2012.

snapshots of physicists celebrating the

milestones that led up to the announcement of

the discovery of the Higgs boson. Carroll is

interested in an up-to-date account of the

state of particle physics and, in particular,

the account does justice to the magnitude

of this happening has been calculated to be

Some neutron stars could, indeed, be strange

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De Rújula and Sheldon Glashow in 1984.

The book gets off to a slow start but the

reading becomes gripping once the stories

move on to the tales of the six central

protagonists. It delves into the Japanese

cultural strengths and weaknesses in equal

measure, from the lack of information

provided regarding the nuclear meltdown at

the Fukushima Daiichi to the best qualities

of the Japanese spirit and character, which

are embodied in the town mayor who changes press coverage of the nuclear

meltdown with a heartfelt plea uploaded to

YouTube.

Living somewhere like the UK it is hard

to picture the epic scale of this disaster

but the authors weave between the stories

of the protagonists to make you feel like

you were there. The book manages to be

either heart-breaking and uplifting in equal

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Strong in the Rain

will stand

as a tale of heroes and villains.

I have often considered the

potential to become dated but I

think the former author has

been careful to present the story

in such a way that it remains

relevant and timely.

Incredibly, the authors

managed to write a book

about a man-made disaster

that has captured the

attention of the world.

and had been

assisted on the scientific background

by friends or by interviews with key CERN

scientists. In Dan Brown’s Angels &

Demons, CERN’s science portfolio was an

excuse for writing a science-fiction novel in

which special effects overshadow reality to

create shocking situations. Bruno Arpaia’s

L’Energia del Vuoto (Vacuum’s Energy)

was more respectful of CERN’s science,

providing detailed scientific descriptions but

with the risk of breaking the rhythm of the

novel (CERN Courier December 2011 p59).

By contrast, J.J. Gómez Cadenas has been

gifted with a rare combination of talents: he

is a good writer and a professional particle

physicist (CERN Courier March 2013 p23).

As a result, Materia Strana is a powerful

thriller based on an almost realistic

scientific case that fits well with an engaging

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stars. The possibility that high-energy

ion–ion collisions could create clumps of

strange matter that would have a tendency to

grow exponentially in size was debated when

the Relativistic Heavy-Ion Collider

started operating in the US. The probability

of this happening has been calculated to be

negligible low but in Materia Strana it is

assumed to be much higher – dangerously

high for a high-luminosity, ion–ion LHC at

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This is the main theme around which

a truly international thriller develops

involving Irene, the gifted young

theorician with Iranian roots and Hector,

an amazing experimental physicist from

the US with multiple backgrounds as a

boxer, soldier and scientist, who becomes

involved in a hardly dangerous mission in Iran –

as well as with Irene. There is also Friedrich,

the powerful but unscrupulous head of the

large experiment that is likely to bring him

the Nobel prize: Helena, the hyper-efficient,

fighting and bright director-general of

CERN, and Boiko, a natural-born killer,

who escaped to Geneva from the horrors

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between Hector and Boiko has the intensity

of the pages of Khaled Hosseini’s The Kite

Runner. Intermixed with dreams and ghosts

crossing the border between life and death,

these stories provide the texture for a
dangerous thriller where good wins eventually

over evil, although with a heavy toll.

Roberto Baitello, University of Trento

Strong in the Rain

By Lucy Birmingham and David McNeil

Palgrave Macmillan

Hardback: £17.99 $27.00

E-book: £12.99

Some dates will remain in the public

consciousness forever, given their cultural

impact. Personally, these would include

11 September 2001 (the attacks on the twin
towers in New York), 7 July 2005 (the London

Underground bombings) and 11 November

(Armistice Day, commemorating the end

of the First World War).

On 11 March 2011 the Tōhoku earthquake

and tsunami, the most powerful to be

recorded since records began in 1900. The

earthquake triggered powerful tsunami waves

that reached heights of up to 40m. The Japanese

National Police Agency subsequently confirmed

15,883 deaths, ensuring that this date will

live long in the Japanese cultural memory.

Strong in the Rain brings together six

stories from people affected by the tragic

events associated with the earthquake/tsunami

on 11 March. The book is described as “part

history, part science” and the

authors use the experiences of the six people

in the book, in addition to their own, to paint

tales of heroes and villains.

The book gets off to a slow start but the

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will stand
By Sean Carroll

CERN Courier

with dark matter, supersymmetry and of full discovery. The theme is developed
surroundings and the beginning of a new era of the journey to describe our everyday
the Standard Model. This marks the end
in space or time but rather its location in
a reference to the Higgs boson’s location
of what the fuss is about. He explains that
theory in any detail, so that we get an idea
Higgs discovery before going into the
He conveys the central importance of the
appealing to the widest possible audience.

political aspects of particle physics, carroll

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Materia Strana (Strange Matter)
By J.J. Gómez Cadenas, translated from the original
Materia Estrana, published by Espasa Calpe
Edizioni Dedalo
Paperback: €17.50
CERN has attracted the attention of a number of writers as a stage for their
thillers and in most cases they have been assisted on the scientific background by
friends or by interviews with key CERN scientists. In Dan Brown’s Angels &
Demons, CERN’s science portfolio was an excuse for writing a science-fiction novel in
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measure and the title Strong in the Rain
– taken from a famous Japanese poem –
becomes an apt description of the events that
unfold.

Some books portraying historical events
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believe that Strong in the Rain will stand
This is Improbable: Cheese String Theory, Magnetic Chickens and other WTF Research
By Marc Abrahams
Oneworld
Paperback: £8.99
Anyone from CERN who attended the Ig Nobel show in Geneva in May, or goes to the real Ig Nobel Awards ceremony in Cambridge, Massachusetts, every autumn will know why they should acquire this book. For those who did not and do not, Marc Abrahams is the editor of the Annals of Improbable Research and the founder of the Ig Nobel Awards. He is also a columnist for the Guardian and here I declare an interest: he is a friend and this book is a collection of his Guardian columns. But even if I did not have an interest to declare, I would say the same thing about this rich assembly of risible research.

If you want to know more about the air-conditioning capacity of the human nose (a paper published in the Annals of Biomedical Engineering) or why European washing machines tend to walk across the room (Journal of Sound and Vibration) or why an 18th century Bishop of Durham is survived by his rectum (no longer attached to his body, it is pickled in a jar at the Hunterian Museum of the Royal College of Surgeons in London), then this is the book for you. You can also learn about the effect of garlic bread on family interaction. In 2002 doctors in Bristol warned in the BMJ that just watching sport could be a health hazard: “Risk of admission for acute myocardial infarction increased by 25% on 30 June 1998 (the day England lost to Argentina in a penalty shoot-out) and the following two days.” A team in Lausanne reported in the International Journal of Cardiology that sudden cardiac deaths were up 63% during the World Cup, compared with an equivalent period a year earlier when there was no World Cup. These things balance out: in the journal Heart, two French doctors wrote a paper entitled “Lower Myocardial Infarction Mortality in French Men the Day France Won the 1998 World Cup of Football” – this is a healthy helping of scholarship served with a light heart.

Simmetrie dell’Universo: Dalla scoperta dell’antimateria a LHC
By Paolo Berra
Edizioni Dedalo
Paperback: €16
Paolo Berra is a nuclear engineer who worked for many years at CERN before going on to do an MBA at Harvard. His background and education are so diverse that it was difficult to know what to expect from his book for the general public about the symmetries of the universe. However, I think that the result of this “experiment” turns out to be a success.

The book starts with a general introduction to the physics of the 20th century. Paul Dirac, Erwin Schrödinger, Albert Einstein and the theories that revolutionized our vision of the universe. The author then goes on to talk about the Standard Model, Richard Feynman, symmetries, unification theories, black holes and other mysteries that the universe is still hiding from researchers. This journey through the history of science and its leading figures ends with part three of the book. The fourth and last part breaks with the narrative as the author focuses on the machines that are necessary to explore what he calls “Big Science”.

I liked the first three parts a great deal. The language is clear and the logical links between various historical periods and scientific findings across the years are emphasized, making the reading particularly interesting. In addition, the author presents difficult theoretical topics in an accessible way that I really appreciated.

The fourth part is where I was expecting the most from the author, as I knew he had worked at CERN to develop machines to be used for hadron-therapy, the medical technique that uses particle accelerators to treat tumours. However, although he is clearly at ease with the topics (there are fewer references to other publications) and the quality of the writing remains high, I thought that he would have had much more to say. My curiosity is therefore not entirely satisfied – which should be interpreted as an invitation to the author to write a second book soon.

From Space to Earth: Laboratory and Marketplace
By Berndt Feuerbacher and Ernst Messerschmid
Schiffer
Hardback: £32.50 $39.90 €39.99

If unlocking the subatomic world was a defining aspect of the first half of the 20th century, then the opening up of our neighbourhood in space took on a similar mantle during the second half. With the launch of Sputnik 1 in 1957, the space age began. More than 50 years on, “space” is now part of daily life – think of satellite broadcasting and GPS systems – but it continues to excite.

First published in German as Vom All in den Alltag (Motorbuch 2007), From Space to Earth charts the achievements of half a century of space flight. It does this not so much in chronological order but in sections on, for example, space in everyday life, exploration of the solar system and the work of astronauts in space. This brings back memories for older readers – from Sputnik-spotting through the first Moon landings to amazing views of Jupiter and Saturn relayed by the Voyager spacecraft and incredible landscapes seen through the eyes of Mars rovers.

However, it is the younger generation – the future astronauts, space engineers and scientists – who the authors have firmly in their sights. Highly experienced in space flight and space science, they started out as physics students. Messerschmid was a CERN fellow who became an astronaut (p28 of this issue). So they are well placed to include side texts that explain the physics behind the achievements. For those who want to join in, pages describe what it takes to be an astronaut, while the final chapter looks into the future and the possibility of space colonization – something that the authors see as inevitable, given the technology.

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Welcome to the digital edition of the July/August 2013 issue of CERN Courier.

This “double issue” provides plenty to read during what is for many people the holiday season. The feature articles illustrate well the breadth of modern particle physics – from the Standard Model, which is still being tested in the analysis of data from Fermilab’s Tevatron, to the tantalizing hints of extraterrestrial neutrinos from the IceCube Observatory at the South Pole. A connection of a different kind between space and particle physics emerges in the interview with the astronaut who started his postgraduate life at CERN, while connections between particle physics and everyday life come into focus in the application of particle detectors to the diagnosis of breast cancer. And if this is not enough, take a look at Summer Bookshelf, with its selection of suggestions for more relaxed reading.

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