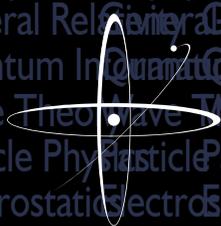


BEING A CHRISTIAN IN PHYSICS



CHRISTIANS IN SCIENCE

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Studying Physics as a Christian

Physicists are usually curious people i.e. people who are curious, rather than in some way odd! They want to know how things work – everything from atoms to galaxies. Discovering the details of God's creation is a wonderful experience for a Christian and physics is relevant to very fundamental questions on the border with philosophy and theology. This leaflet aims to encourage you in your calling as a physicist and to provide some advice on dealing with common challenges associated with being a Christian in physics.

About the Authors

Daniel Holt is a physics undergraduate at the University of Birmingham. His fascination with physics was stimulated by a diagram of an atom in an encyclopaedia at age ten. He became a Christian, aged sixteen, at a Youth With a Mission (YWAM) base in Brazil. He completed a Discipleship Training School course with YWAM and developed a passion for apologetics and sharing his faith, whilst maintaining a burning desire to explore the complexities of Creation.



Professor Paul Ewart is Head of Atomic and Laser Physics at the University of Oxford. He graduated from Queen's University Belfast and did post-doctoral research at Imperial College, London before moving to Oxford. His research has ranged from quantum and nonlinear optics to applications of laser spectroscopy in engineering and chemistry. He also has an active interest in natural theology, exploring the interaction of science and the Christian faith.

Physics as a Calling

Physics is not so much a 'calling' as an expression of our God-given desire for understanding. The knowledge of Nature that it provides forms the foundation of technology that transforms human life as well as giving us insights into the fundamental nature of reality. People have perhaps always wondered about how things came to be as they are, but the questions they asked, and the answers they gave, have been coloured by their culture and world-view. So it's not surprising that physics, as such, doesn't figure in the Bible! As universities began to be established in Europe the work of the Medieval philosophers, many of them deeply religious, laid the foundations of the scientific revolution of the seventeenth century. Their study of 'Natural Philosophy' included what today we would call 'Physics.'

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The 'Father' of the experimental method, Francis Bacon, observed that a superficial acquaintance with such philosophy could incline a person to atheism, but a deeper, more profound understanding "... *bringeth men's minds about to religion.*" So science and faith have had a long-standing relationship. The Biblical world-view that saw Nature as the creation of a rational God led to the expectation that it could be understood by rational thought and described by orderly laws. This mutually encouraging interaction between science and Christian faith is in contrast to the relatively modern idea that they are in conflict. It is therefore important for Christians to be active in science, and physics in particular, and for them to hold together their science and their theology in a coherent and intellectually honest way.

Physics requires rigorous honesty before the evidence and awareness of the limitations of our science. Physicists are also especially aware of uncertainty and are careful not to claim more than is justified by the data. Such honesty and humility are profoundly Christian. As evidence

accumulates, and theories are validated by repeated observation and experiment, we are open to accepting the best inference of the truth. This has implications for interpreting the Bible and we can be confident that, since 'all truth is God's truth,' there will be no conflict between a genuine scientific result and what the Bible actually means. The age and size of the universe, with all the wonders of cosmology revealed through modern telescopes, present an awe-inspiring view of Creation that informs our minds and hearts of the power and glory of God.

This resonates with St Paul's words, "*For ever since the world was created, people have seen the earth and sky. Through everything God made, they can clearly see his invisible qualities—his eternal power and divine nature.*" (Romans 1:20) The enhanced vision of God's greatness, provided by physics, enhances our praise and worship.

Physics and Christianity - Common Challenges

Physics is the ultimate 'hard' science, in the sense that it leaves no room for personal opinion or subjective feelings and its conclusions appear to be 'objective truth'. Conflicts may seem to arise between some foundational beliefs and the 'laws of physics,' e.g. when miracles are involved. These are complex issues and there may be no simple way of resolving all difficulties. The apparent conflicts may involve different kinds of issues such as Biblical interpretation, historical evidence, the assumed uniformity of nature or the limitations of our present knowledge. It is important to remember, however, that truth may involve knowledge that is not accessible to physics. The reductionist claim that there is 'nothing but physics' is a 'faith statement' that cannot itself be proved by physics!

Physics proves that miracles are impossible so Christianity is irrational nonsense.

Science shows that key beliefs e.g. the virgin birth and Jesus' resurrection body passing through solid walls are akin to belief in the tooth fairy. So how can a physicist be a Christian and believe in such weird things when they are disproved by the laws of physics? These

are big questions, but perhaps the place to begin is to realise that 'Laws,' even laws of physics, do not prove anything. Laws describe what happens provided nothing else is going on, or there is no outside interference. However, if there are other effects operating and there is something, or someone, outside of Nature, then it is possible that the usual laws may not always be obeyed.

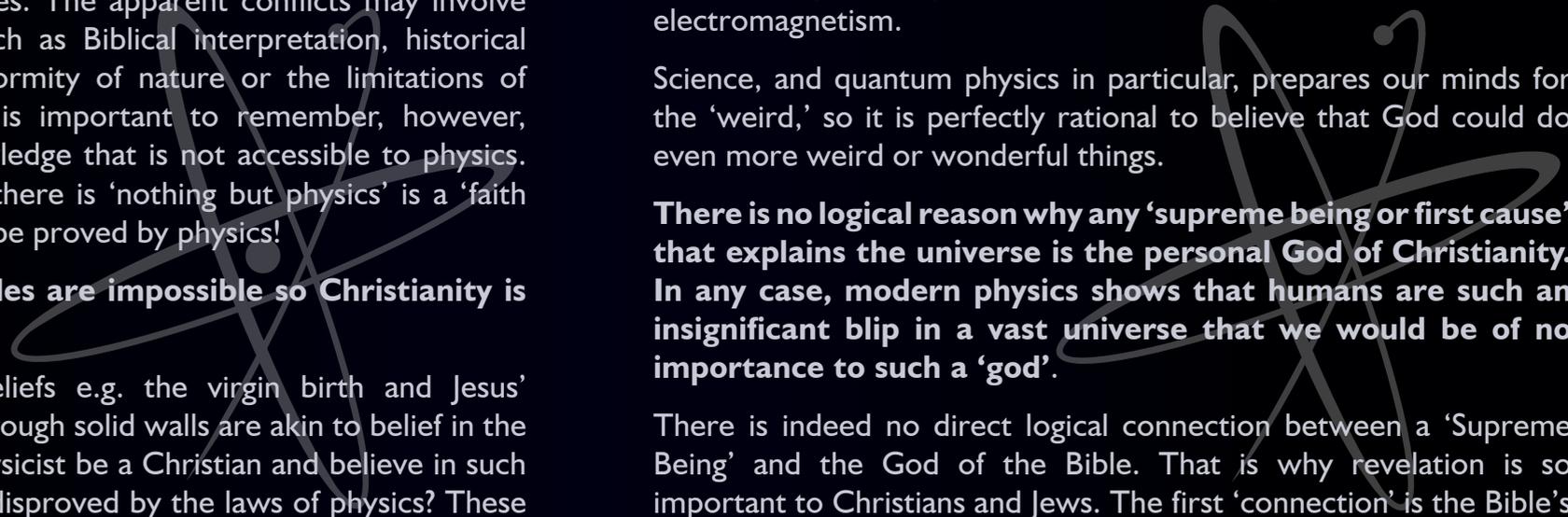
For example, the law of gravity describes the way objects that are heavier than air always fall downwards, unless the laws of aerodynamics are also operating to allow them to fly. Furthermore, if God is 'outside' Nature – and there are reasons other than miracles for believing He exists – then it is certainly possible that He could 'interfere' with things. Events that at present have no rational explanation could, in principle, be explained by the effect of other 'laws' of Nature known, as yet, only to God. Finally, it is worth noting that modern 'miracles' of cloning achieve 'virgin birth' and quantum physics has produced new states of matter that can pass 'miraculously' through other matter, violating the laws of classical electromagnetism.

Science, and quantum physics in particular, prepares our minds for the 'weird,' so it is perfectly rational to believe that God could do even more weird or wonderful things.

There is no logical reason why any 'supreme being or first cause' that explains the universe is the personal God of Christianity. In any case, modern physics shows that humans are such an insignificant blip in a vast universe that we would be of no importance to such a 'god'.

There is indeed no direct logical connection between a 'Supreme Being' and the God of the Bible. That is why revelation is so important to Christians and Jews. The first 'connection' is the Bible's

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identification of God as the Creator. However, although we can all see something of this Creator in the world, unaided by revelation we could not tell very much about his/her nature.

The vast majority of humans who have ever lived have sensed this Creator and also that the moral dimension of life is linked in some way with this 'god'. But an impersonal 'creative power' or 'force' has no morality. Only a personal being can be moral. The Bible is a history of people's encounter with this Moral Being, leading up to Jesus as God's supreme way of revealing himself to mankind. There is also the experience of people down the ages who, through faith, have found a very personal relationship with God. So there is a logical connection, but it involves a series of steps linking different kinds of evidence: knowledge of God through the natural world (including physics), our moral sense, and human encounters with God down the ages. Above all, it is the experience of forgiveness and peace through Jesus Christ that gives us confidence that we can meet God in person.

Finally, in terms of logic, there is no connection between size and importance! There is no reason to suppose our value to the Creator depends on our size or location in the universe. We know we are important to God because he has revealed himself in Christ, who died on a cross to show his love for us.

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Finding the Higgs Boson supports the 'Standard Model' of particle physics and is another step to an underlying 'Theory of Everything'. This will explain the Universe so there is no need for the 'God hypothesis.'

This reductionist philosophy, a kind of 'fundamentalist materialism,' assumes that everything can be explained in terms of the smallest elementary particles or fields and that God is just a way of explaining the present gaps in our

knowledge. There are several errors in this idea. Firstly, physicists already know that 'reductionism' cannot explain everything. Some phenomena e.g. superconductivity, emerge only at more complex levels and require a different type of explanation.

More importantly, an explanation that rested on a non-rational foundation, such as the random motion of elementary particles, would itself be non-rational and hence invalid. As C. S. Lewis has pointed out, "*Unless human reasoning is valid no science can be true.*" Therefore an ultimate explanation of existence must allow for something 'outside' or 'beyond' reason. For the Christian physicist, God is the ultimate foundation for our Reason. Christianity recognises that there is an underlying logical foundation to the world – the Word or 'Logos' – and this "*Word became flesh and dwelt amongst us.*" John 1:14. So, God is not an explanation in the scientific sense – He is the reason why our reason or indeed any rational explanation is valid.

How can the Bible be taken seriously when its Creation account conflicts with physics?

It is true that some Christians think that, according to Genesis, the world was created in six days about 10,000 years ago, whereas cosmology, astrophysics, geophysics etc. show that the Universe is about 14 billion years old and the earth about 4.5 billion years old, with life evolving over many millions of years. Christian physicists, however, are committed to accepting the truth wherever it is found and this applies also to interpreting the Bible in a truthful way.

It is quite clear that the Creation story in Genesis is not intended as a scientific account of how and when the universe was made. Its aim was to declare that we exist for the purpose of the one Creator and that no created thing, sun, moon or stars should be worshipped as a god. We need to read the Bible intelligently, taking account of the best scholarship to help us understand the culture and concerns of the ancient writers. The literalistic, 'Creationist' way of reading the Bible is relatively modern – it grew up about 150 years ago largely in the USA for various social and religious reasons. The early Church

and even the Reformers, however, recognised that different ways of interpreting were needed for different parts of the Bible. St Augustine warned us not to “... conform the meaning of Holy Scripture to our interpretation but our interpretation to the meaning of Holy Scripture.” The apparent conflict with physics disappears when the proper meaning of the Bible is recognised.

Paul Ewart and Daniel Holt

FURTHER INFORMATION

Articles:

Kolstoe, S., Moore, H., “*Being a Christian in Research*” (2012). Another leaflet in this series, [www.cis.org.uk/resources/articles-talks-and-links/students/Faraday Papers](http://www.cis.org.uk/resources/articles-talks-and-links/students/Faraday%20Papers) (www.st-edmunds.cam.ac.uk/faraday/Papers.php). Papers by several different authors on various science and religion topics.

Books:

Lewis, C. S., “*Miracles*” (1960) ISBN 978-0007461257

Polkinghorne, J., “*Belief in God in an Age of Science*” (2003) ISBN 978-0300099492

Polkinghorne, J., “*Questions of Truth*” (2009) ISBN 978-0664233518

Wilkinson, D., “*God, Time and Stephen Hawking*” (2001) ISBN 978-0825460296

Useful Websites:

Christians in Science: www.cis.org.uk

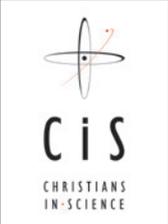
ASA, CiS’s US sister organisation: www.asa3.org

Be Thinking: www.bethinking.org/science-christianity/

The Faraday Institute: www.faraday-institute.org

Test of Faith: www.testoffaith.com

Institute of Physics: www.iop.org/

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