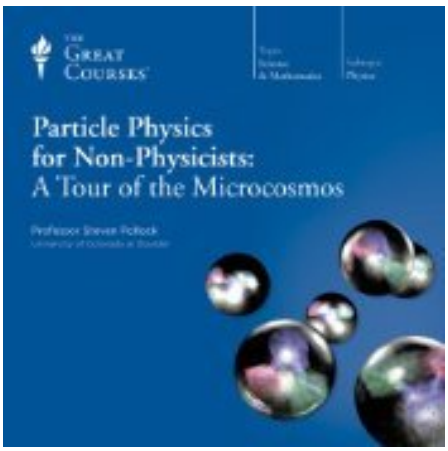

Particle Physics For Non Physicists: A Tour Of The Microcosmos

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Professor Steven Pollock of the University of Colorado at Boulder delivers twenty-four lectures on particle physics.

Particle Physics For Non Physicists: A Tour Of The Microcosmos Details

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From Reader Review Particle Physics For Non Physicists: A Tour Of The Microcosmos for online ebook

Nilesh says

About the best book i have listened to on particle physics. Despite being branded as a course, the lectures make a better book on particle physics for normal readers than almost any popular books. This is possibly one of the best early courses for anyone studying the standard model.

The author has a knack of keeping extremely complicated things extremely simple. He covers many grounds in a relatively short time but while rarely appearing superficial. His description on various particles, their discoveries and concepts like spin, colour etc is one of the best I have read. For example, the lucidity with which he explains how these concepts are nothing but quantum states is quite remarkable.

The same holds true when he introduces various types of quarks and neutrinos. He manages to keep the framework simple and understandable despite adding particles by dozens. The author successfully shows why the standard model, despite its lack of deterministic construction and other oddities is remarkable and a great representation of the universe around us.

As the book is written before the Higg's discovery, it may appear a bit dated. The sections on dark energy in particular could have been more detailed. Yet, all in all a remarkable book.

Michael says

This is hard to rate, because I'm not sure how much of the difficulty of this topic is due to its complexity, and how much is due to my density. I feel like I learned a lot of physics nomenclature, and now I can impress my friends with terms like lepton and W boson and renormalisation... But I still don't really get what any of it is, fundamentally. I don't think electrons are tiny dots, but the lecturer described them that way. He also gave at least a whole lecture saying how good the standard model is, and that he can't imagine it being falsified, and believe me, it's just good, and the problems aren't a big deal, even though it can't it explain a few things, like, oh, say, gravity. I really liked Pollock's style though. He cares about the content and making sure that his audience understands him. This series is also dated (2003), so it doesn't include the results of the LHC tests and the Higgs field/boson.

Sebastian says

Oh, this was pure delight. A very accessible and clear description of particle physics that brought order and clarity to the particle zoo that kinda already filled my head from reading other, less well organized guides to the same rough territory. It is clear that in addition to being a physicist, Prof. Pollock is an avid educator and an excellent lecturer (how he times each of his lectures to come out at 30 minutes is beyond me), keenly aware of the boundaries and (lack of) intersection of the sets of “common knowledge for a layperson” and “common knowledge for a physicist”, and very good in developing the material in gradual, baby steps. As

others have noted, it is mildly dated in that at the time of publication LHC was not yet fully up, so the Higgs was not yet confirmed, and finding supersymmetric particles was still a hope for the LHC energies, but as an equation-free primer of particle physics, you cannot ask for a better (audio)book.

Gary says

Fascinating overview. Dr. Pollock is clear and decent about explaining the intuitive side of a mathematical field.

Frank Davis says

Well delivered, easy to follow and absolutely fascinating. I was captivated from beginning to end.

Ed says

Much easier to understand that the Elegant Universe. Though, truth be told it was still confusing and the thought of studying physics for fun sounds very daunting past the first couple of lessons.

Ian says

Ok so if space, the universe, galaxies billions of light years away is your thing then this book is the total opposite and may not stimulate you. Instead of BIG we are talking small, microscopically small, even smaller. Atoms are huge compared to the particles that they are made up of and this book explains them all. The constituents of life itself.

Right, the downside to this interesting subject is that you will need to concentrate hard and I mean hard because it is not an easy read. Skip a chapter and you won't understand a word of the next one. The author starts of with the atomic world in general and gives a great intro into the world of atomic physics. He then starts to dissect the atoms into what they are made of (the particles). He explains each particle and how, with electricity, magnetic fields and forces, they interact with other particles.

Fact of the day: *Billions of particles are passing through 1 square centimetre of your body every second. They continue on through the earth and off they go disappearing into space. How crazy is that then?*

If you have a good understanding of physics and want to delve deeper then this book will be right up your street but be warned it can get really confusing at times. From experience it might be worth ploughing through it with consistency. It isn't a good book for dipping in and out of or you might lose the plot as I did and I had to flick back a chapter to remind me what a muon is. What is a muon? read the book and find out.

Lolo Rose says

Didn't quite finish... He wasn't breaking things down exactly.

Andy Boyan says

Everybody should read this. Especially anyone in any of the social sciences. Excellent excellent.

Nicholas Dummer says

I've spent the last few weeks listening to this at work. It is a great synopsis of our current understanding of particle physics (up to 2009 so it doesn't include the discovery, only the theory of the Higgs). I enjoyed the discussion of the history and Pollock's stories about some of the physicists. At times, he really makes an effort to tell the story which is so often lost in such technical subjects such as these. I highly recommend this to anyone with the slightest interest in fundamental physics. These lectures were very approachable and generally fascinating.

Gary Beauregard Bottomley says

The choice is yours. You can let the popular media and the Mystics continue to tell you that particles physics is woo and mysticism or you can listen to this highly accessible lecture and realize what particle physics is all about and learn why neutrinos are so important, what c-p violation means, and what makes up the universe at the most fundamental level.

The lecturer doesn't tell you anything without first telling you the context and how we know what we know. I still don't understand what a photon really is or what exactly is meant by spin, but that's not the fault of the lecture. It's more that their real meaning is tied up with esoteric mathematics and the lecture stays away from the math.

Ralph Trickey says

Excellent introduction
My only quibble is that it's a bit dated. That doesn't change any of the material, but it ends before the LHC was online and has missed a few of the latest developments.

Kevin Dobill says

Halfway through, finished volume one. Very cool, but at this point is getting deeper - I am still wowed by Everything is Made of Atoms.

Shockvalue says

Just the right book for me. I love the subject but am unlikely to sit down with a pencil and paper to do the math (it's only an interest, not a job). This allows me to grasp the ideas and have a crude understanding of what is going on in there. Pollock is an entertaining instructor.

Jan says

One of the best overviews of Particle Physics.
