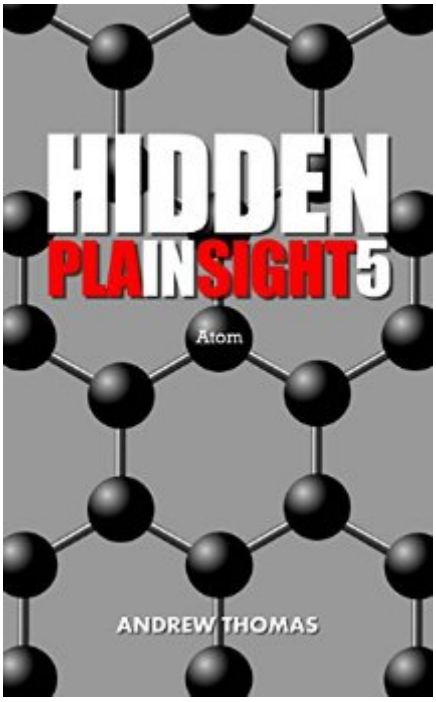
# Hidden In Plain Sight 5: Atom



## Synopsis

An introduction to the principles of particle physics.Solve the 100-year-old mystery which the great physicist, Paul Dirac, believed linked atoms to the secret of the entire universe.

## Book Information

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## Customer Reviews

The first part of "Hidden in Plain Sight 5" is a very good description and explanation of quantum mechanics. It starts with a very clear and well-written derivation of the Dirac Equation, using the first principles on which Special Relativity is based. Here, Dr. Thomas introduces a bit of matrix algebra, which some readers might find a bit off-putting without having a fairly strong mathematical background. He provides the best explanation I’ve ever read about the origin of spin, and provides a clear visual demonstration of how an electron rotates 720 degrees to return to its original spin state. After that brief introduction, the book goes into gauge theory, where Dr. Thomas explains the rationale for the forces of nature as consequences of symmetries. There is nothing particularly new here, but the book does provide an excellent foundation for what follows next: the Standard Model of Particle Physics.Here, Dr. Thomas provides a very sensible and logical explanation for why there are so many "fundamental" particles. This is his underlying theme: Nothing exists without a purpose.

However, at times the "rules" of the SM seem kind of arbitrary. For example, he doesn't explain the basis for the rule that requires (n^2 - 1) gauge bosons for each position of a symmetry wheel. Thus, it remains a mystery why (3^2 - 1) = 8 gluons are required for the SU(3) symmetry corresponding to the 3 colors of quarks, and why there are (2^2 - 1) = 3 bosons for the weak force governed by the SU(2) symmetry of the top and bottom quarks.The final part of the book delves into some pretty wild speculation involving quantum gravity, which is interesting if you're up for it. In fact, Dr.