

Abstract —

In the novel and movie “Angels & Demons,” a small droplet of antimatter threatens to entirely destroy Vatican City. Antimatter, matter’s opposite, is quite real. Furthermore, when antimatter and matter meet, they do destroy each other. The universe is safe for life only because there is virtually no antimatter in it. Yet, scientists believe that just after the Big Bang at the beginning of the universe, there were equal amounts of antimatter and matter.

In this lecture, we will explain what antimatter is, and how it is related to matter. We will describe the efforts of scientists to understand how the universe, starting out with equal amounts of antimatter and matter, came to be a world with almost no antimatter, so that we can exist.

Speaker description —

Boris Kayser is a theoretical physicist who studies the subatomic particles that are the building blocks of matter. He is especially interested in the asymmetry between matter and antimatter, and in neutrinos, which are among the most abundant subatomic particles in the universe. With colleagues, Kayser has suggested several approaches to studying the matter-antimatter asymmetry experimentally. An author of 150 scientific papers and a book, and an enthusiastic speaker, he has appeared in an award-winning TV documentary on the neutrinos, and is one of the leading public speakers on these elusive but ubiquitous particles.

Kayser is a Fermilab Distinguished Scientist at Fermilab, the nation’s premiere laboratory for the study of subatomic particles. He is also Chair of the American Physical Society’s Division of Particles and Fields, whose members are the nation’s physicists who seek to understand these building blocks of nature.