

# Presence of Matter in the Universe: An Unsolved Puzzle



Matter is all around us. Our universe is composed of stars and other heavenly bodies all made of matter. Yet understanding the presence of matter is a problem using known laws of physics. It would be much simpler to understand a universe without matter, but then we would not exist! The universe began with the Big Bang, and passed through an intense hot stage when matter, antimatter and radiation were in equilibrium. By all rights, as the temperature cooled in the expanding universe, matter and antimatter should have annihilated each other. The fact that some matter remained can only be understood if laws of physics are not the same for matter and antimatter. For the past 30 years physicists have searched for this difference culminating in beautiful experiments done in US and Japan. Difference in behavior of matter and antimatter has been established, however it is still far short of the necessary amount to explain our universe.

In this talk we shall review:

- early composition of the universe
- what is antimatter and how it was discovered
- experiments that discovered the difference between matter and antimatter
- why the problem is still unsolved
- new ideas to resolve the problem and how they may be tested.



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## ~COLLOQUIUM~

Friday, May 11, 2007

3:00 p.m. in Boyle 155, COCC Campus

Presented by **Dr. Nilendra Deshpande**

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