



**THE UNIVERSITY OF CHICAGO  
ENRICO FERMI INSTITUTE  
ARTHUR H. COMPTON LECTURES  
SIXTY SECOND SERIES**

**“CHALLENGES TO SEEING THE INVISIBLE:  
FOREGROUNDS AND BACKGROUNDS IN THE SCIENTIFIC EXPLORATION OF THE UNIVERSE”**

**By DOROTHEA SAMTLEBEN  
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Dear Friends of the Enrico Fermi Institute:

We cordially invite you to join us for the next series of the Arthur H. Compton Lectures. The Lectures are intended for the general public, friends of the Enrico Fermi Institute, members of the University community, and interested citizens of the Chicago area. They provide a descriptive account of some of the frontiers of present-day science. We don't expect you to have a formal background in mathematics or science, but hope to appeal to your curiosity and to share with you some of the excitement of modern scientific research.

Seht ihr den Mond dort stehen?  
Er ist nur halb zu sehen  
und ist doch rund und schön.  
So sind wohl manche Sachen,  
die wir getrost belachen,  
weil unsre Augen sie nicht sehn.  
Matthias Claudius (1740-1815)

Do you see the moon up there?  
Just half of it is visible  
Yet it is round and beautiful.  
So indeed are many things  
which we confidently laugh at,  
Because our eyes cannot see them.

Our senses do offer a complex perception of the world. However, we are bound by certain constraints: the human ear is only sensitive to a limited range of frequencies, the eye only functions over a limited spectrum of light, and most of the Universe is hidden from direct access by the human senses, be it the inconceivably large scales and distances, too far to be reached in any reasonable time, or the very smallest scales, too tiny to be touched by a human hand. Human curiosity and creativity has driven the development of a variety of methods and devices to expand the sensitivity and reach the invisible and untouchable features of the Universe.

In these lectures Dr. Dorothea Samtleben will guide us through the challenges encountered in the exciting exploration of the Universe and illustrate the foregrounds and backgrounds scientists have to overcome to finally reveal the 'hidden' Universe to the human senses. The lectures will explain the advanced techniques used for studying the Universe, both on small and large scales, and illustrate how investigations and discoveries on the smallest scales impact our understanding of the largest scales (and vice versa).

No scientific background is required. Just bring your curiosity and join us in exploring ways to seeing the invisible...

We hope you can join us for the first lecture on Saturday, October 1, 2005 at 11:00 AM in Room 106 of the Kersten Physics Teaching Center, 5720 South Ellis Avenue. Enter through the door at the southwest corner.

Sincerely,

James E. Pilcher, Director