

Carnegie Institution

NOVA Evening

“Runaway Universe”

Presentation by Wendy Freedman

Staff Scientist at the Carnegie Observatories, Carnegie Institution of Washington

Suggested Reading List

“The Universe in a Nutshell”

by Stephen Hawking

Since Stephen Hawking’s previous book, “A Brief History of Time” unexpectedly became a multi-million selling publishing phenomenon a decade ago, the growing legion of admirers of the brilliant theoretical physicist have awaited the sequel. Hawking, who is probably the most glamorous physicist since Einstein, has take out time from constructing a “theory of everything” to produce “The Universe in a Nutshell,” a sort of delightful “coffee table book for geniuses” which gives the rest of us the flavor of the major discoveries and quandaries at the cutting edge of theoretical physics today. Beautiful, four-color illustrations are nicely complemented by Hawking’s lucid prose, presented overall in a whimsical style very inviting to the reader. For anyone who wishes to contemplate the vastness and strangeness of our universe, this is a “must” read.

Published by Random House, Inc. (2001) \$35.00 hardcover

“Before the Beginning: Our Universe & Others”

by Martin Rees

One of Hawking’s fellow students at Cambridge was Sir Martin Rees, who currently holds the title of England’s Astronomer Royal, and who has written several excellent, plainspoken books on cosmology. In **Before the Beginning**, he tackles theories of cosmic evolution, which, amazingly, astrophysicists have used to construct a reliable picture of what the universe was like when it was only a single second old. But, while scientists once believed ours to be the only universe, many now theorize that ours is only one particular instance of a cosmic “multi-verse,” many universes which are each as unique as snowflakes, which have existed and will continue to for all eternity. With a foreword by Stephen Hawking, **Before the Beginning** includes first-hand portraits of major figures in cosmology with whom Rees has collaborated, including Roger Penrose, Fred Hoyle, Subrahmanyan Chandrasekhar, and Hawking himself.

Published by Perseus Books (1998) \$16.00 paperback

“The Non-Local Universe: The New Physics & Matters of the Mind”

by Robert Nadeau and Menas Kafatos

Who better to write a book on the theory of non-locality than a couple of local boys? The authors of **The Non-Local Universe** are two professors at George Mason University in Northern Virginia. Robert Nadeau is a historian and philosopher of science; his colleague, Menas Kafatos, is a physicist. After fifteen years of collegial discussion and debate, the two have collaborated on a book about one of the most astounding discoveries of the new physics: the idea that reality is non-local. In 1997, experiments with light particles showed that photons that were literally miles apart could communicate with each other instantly, even though they were apparently no longer connected. The implications of these observations caused a firestorm of controversy in the scientific community. If true, this theory could propel physics into the realm of metaphysics, and suggest that the universe itself may not be conscious. This book is recommended reading for anyone interested in metaphysics or cosmology.

Published by Oxford University Press (1999) \$15.95 paperback

“The Accelerating Universe: Infinite Expansion, the Cosmological Constant, and the Beauty of the Cosmos”

by Mario Livio

In this entertaining and lively exploration of the universe, Hubble Space Telescope scientist Mario Livio introduces us to the “old cosmology,” which culminated into the view of a perfectly balanced universe, and then presents all of the fascinating ideas being explored by cosmologists in the “new cosmology,” which has been inspired by the discovery of acceleration. Providing extraordinary clear explanations of all the key concepts and the theoretical ideas, Livio is a marvelous guide through this most exciting frontier in science today.

Published by John Wiley & Sons, (2000) \$15.95 paperback

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