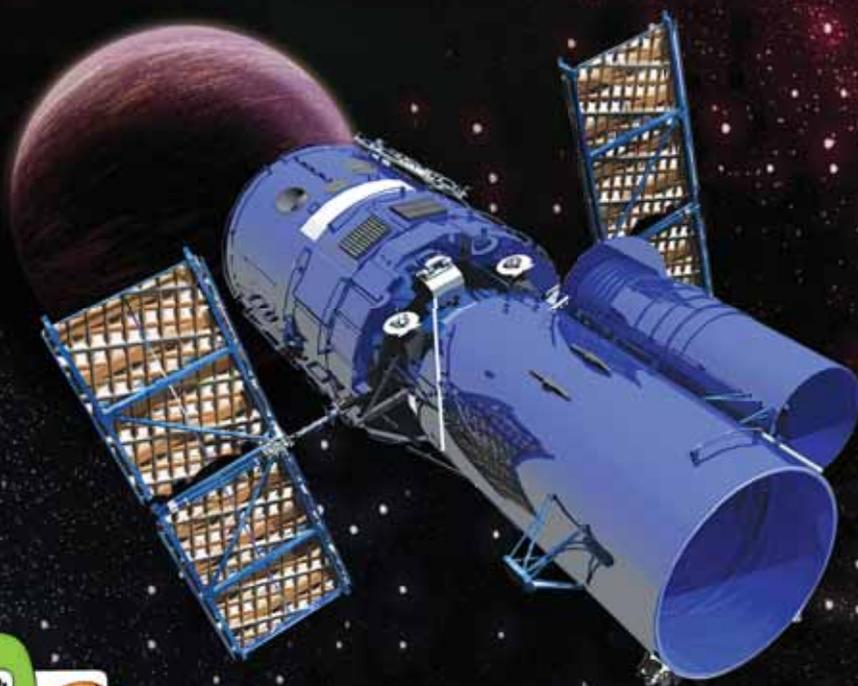


+ SCIENCE IN OUR ENVIRONMENT +

GALAXIES STARS PLANETS



Exciting and
fun-filled
science!





An imprint of The Energy and Resources Institute

© The Energy and Resources Institute, 2011

First published in 2011 by
The Energy and Resources Institute
TERI Press

Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi 110 003, India

Tel. 2468 2100/4150 4900, Fax: 2468 2144/2468 2145

India +91 ■ Delhi (0)11

Email: teripress@teri.res.in ■ Website: <http://bookstore.teriin.org>

ISBN 978-81-7993-341-1

ISBN 978-81-7993-357-2 (set of 6 books)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher.

All export rights for this book vest exclusively with The Energy and Resources Institute (TERI). Unauthorized export is a violation of terms of sale and is subject to legal action.

Author: Aanchal Broca Kumar

Managing Editor: Anupama Jauhry

Series Editor: Arshi Ahmad

Design: Santosh Gautam

Image Research: Yukti Garg

Illustrations: Yatindra Kumar, Vijay Nipane, Neeraj Riddlan

Production Head: T Radhakrishnan

Photo credits

Nebula (pg 9): NASA/JPL-Caltech/R Gehrz (University of Minnesota);

Eris (pg 18): NASA, ESA M. Brown (California Institute of Technology)

Printed and bound in India

This book is printed on recycled paper.

+ SCIENCE IN OUR ENVIRONMENT +

GALAXIES STARS PLANETS



The Energy and Resources Institute

A note from Dr R K Pachauri

The field of science has witnessed remarkable advancements during the past century. We have made breakthroughs in space exploration, reduced global distances through innovations in communications, and unravelled mysteries of the human body while continuously adding to our knowledge of the plant and animal kingdoms. Some of these advancements, however, have had adverse effects on the environment, and have endangered the lives of those they were supposed to benefit.

This series throws light on the basic concepts of science while relating them to the environment. For example, what are the various sources of energy we use in our daily lives? What is clean energy? How was our universe formed? How have humans changed the way they communicate over the ages? Who are the members of the plant and animal kingdoms, and what are their special features?

Exploring the world around us through the eyes of budding scientists, these books intend to inform, inspire, and inculcate a spirit of scientific discovery. This series encourages young readers to keep a balance between scientific growth and the environment as they innovate and add to the ever-growing list of scientific inventions that make our lives better.



R K Pachauri
Director-General, TERI
Chairman, Intergovernmental Panel on Climate Change

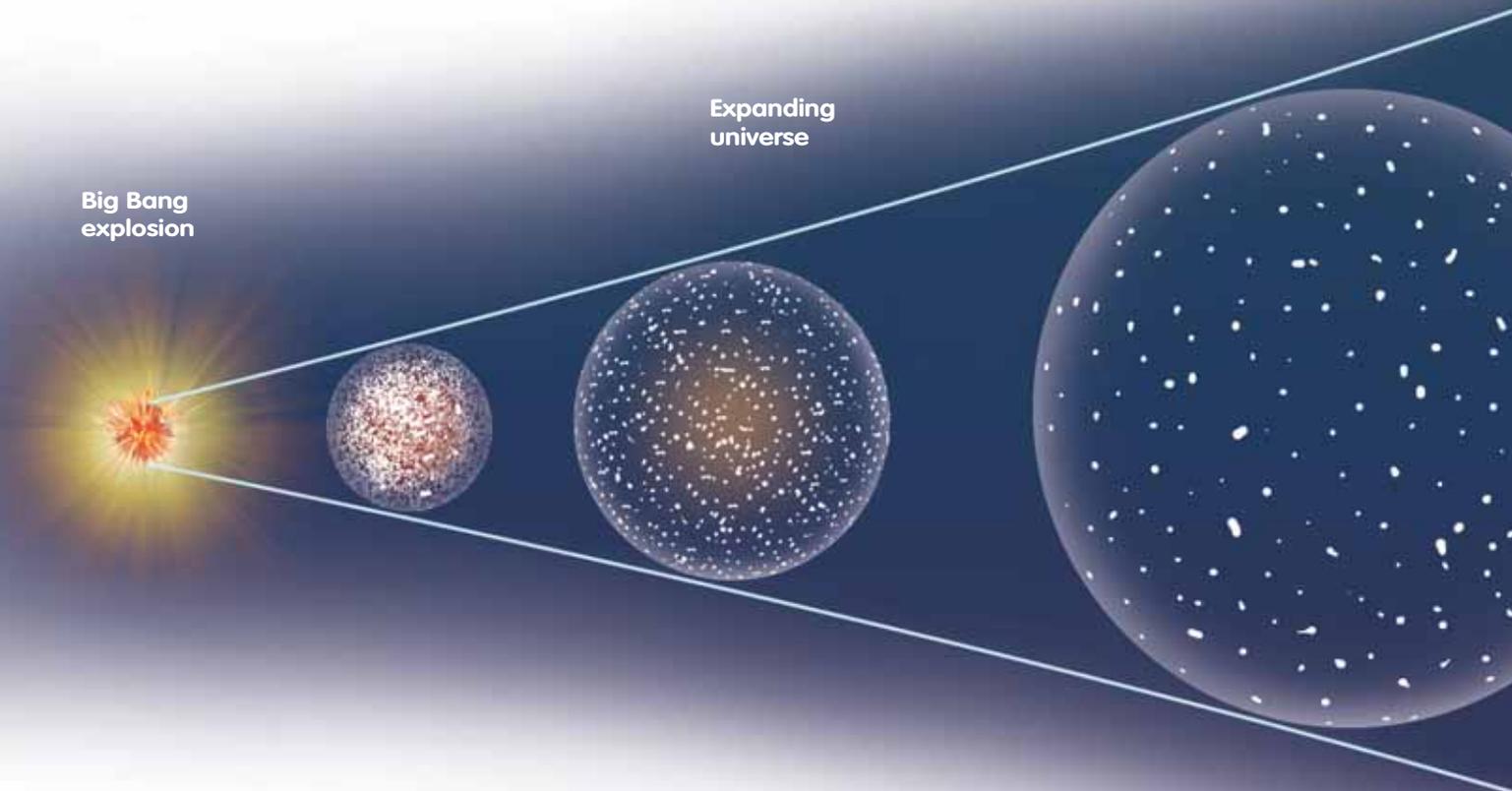
CONTENTS

WHAT A BANG!	6
STARRY SKIES	8
EARTH'S ADDRESS IN SPACE	10
THE SUN IS THE BOSS	12
THE BLUE PLANET	14
OUR OWN MOON	16
LET'S GET TO KNOW THE PLANETS	18
ROCKS IN SPACE	20
ECLIPSES	22
ARE WE NOT ALONE?	24
EXPLORING SPACE	26
NOT SO FAR AFTER ALL!	28
GLOSSARY	30

WHAT A BANG!

Imagine looking up at the sky and not seeing the twinkling stars or our shiny Moon. It is a scary thought, but it is true. Billions of years ago, there was no universe! But how was it created?

Scientists believe that around fourteen billion years ago, all matter and energy were concentrated in a single point. Then occurred a tremendous explosion called the Big Bang. This explosion threw out fragments of matter outwards with great force. Gradually, these bits and pieces filled up space. As time passed, the fragments cooled and combined to form hydrogen and helium gases. It is these gases from which stars and galaxies are made.



Smarten
Up!

Scientists are carrying out the most powerful experiment with the help of a device called the Large Hadron Collider. They want to recreate and understand the conditions just after the Big Bang.

REMEMBER The universe started with a Big Bang.



Question Time!



Who coined the term 'Big Bang'?



The term 'Big Bang' was coined by Fred Hoyle during a radio broadcast in 1949. He was a British astronomer, mathematician, and writer.



Our universe is still expanding in all directions. Edwin Hubble, the 'father of the Big Bang theory', stated in 1929 that the farther a galaxy is from us, the faster it moves away. Take a rubber balloon and blow it up a bit. Then make some dots on it with a pen. When you blow into the balloon again, you will see that the dots not only expand, but also move away from each other. That's exactly how the universe is expanding.

Will the universe keep on expanding forever? It is believed that either this expansion will go on forever or the universe may stop expanding and shrink again, causing the Big Crunch. If this happens, it will be the end of our universe!

Before the Big Bang, the entire universe was packed in a hot, dense bubble thousands of times smaller than a pinhead. Time, space, and matter all began with the Big Bang!

STARRY SKIES

The universe is dotted with countless twinkling stars. These stars occur in huge clusters, or groups. A cluster of stars is called a galaxy. Think of a galaxy as a huge 'star city'. Besides stars, this city has planets, their satellites (or moons), comets, asteroids, and clouds of dust and gas called nebulae, which are sometimes called 'flowers of the cosmos'. They light up the universe with colourful bright light—sometimes bright pink, red, violet, and blue.

Scientists are still trying to figure out just how big the universe is!



What is a light year?



It is the distance that light can travel in one year. It is around ten trillion kilometres. That's 10,000,000,000,000 kilometres!

REMEMBER The universe is made of stars, galaxies, and nebulae.

Ever wondered where so many stars came from? They are formed inside the nebulae! Gravity causes gases and dust to contract into a smaller body. After millions of years, the body becomes hot enough to glow, and a star is born!

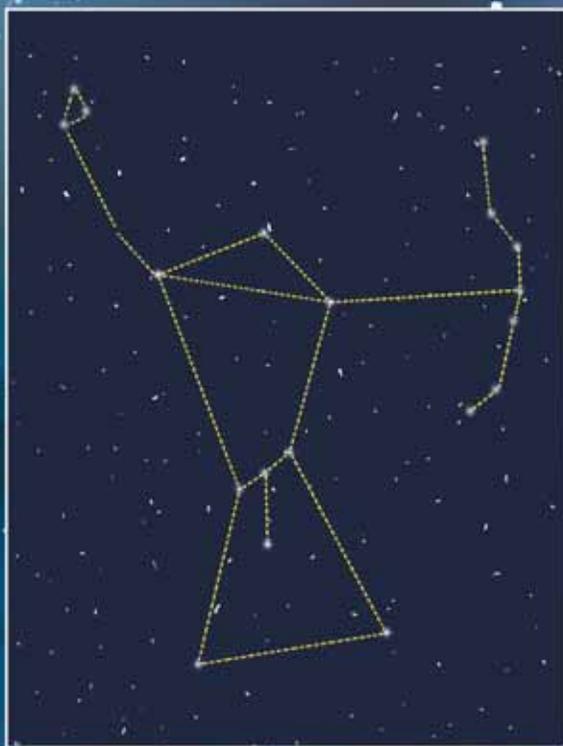
Smarten
Up!



Galaxies look beautiful from the Earth. Some are spiral with curved arms around a bright centre; some are elliptical, while others have no particular shape. Scientists believe that there are more than 100,000 million galaxies in the universe and billions of stars!

Stars have also been grouped to form patterns in the sky called constellations. There are eighty-eight recognized constellations. The constellation of Cassiopeia looks like the letter 'W', while that of Orion resembles a hunter. The Ursa Major (Great Bear) and the Ursa Minor (Little Bear) resemble bears. They are also known as the Big Dipper and Little Dipper. You can easily spot these constellations on a clear night.

The colour of a star depends on the temperature of its surface. The brightest star, Sirius, also known as the 'Dog Star', is a blue star but appears to change its colour at different times. Sirius is also one of the nearest stars. Besides the Sun, Proxima Centauri, which is 4.3 light years away, is our nearest star.



With a number of bright stars, Orion is the most impressive constellation in the sky. It is named after Orion, a hunter in Greek mythology.

Science in our Environment : Galaxies, Stars, Planets



Publisher : TERI Press

ISBN : 9788179933411

Author : Aanchal Broca
Kumar

Type the URL : <http://www.kopykitab.com/product/8446>



Get this eBook