

Penguin Random House

DK LONDON

Senior Project Editor Steven Carton Senior Art Editor Stefan Podhorodecki Editor Francesca Baines Editorial Assistant Charlie Galbraith Designers Sheila Collins, Mik Gates Managing Editor Linda Esposito Managing Art Editor Michael Duffy Jacket Editor Maud Whatley Jacket Designer Mark Cavanagh Jacket Design Development Manager Sophia MTT Producer, Pre-Production Luca Frassinetti Producer Gemma Sharpe Publisher Andrew Macintyre Publishing Director Jonathan Metcalf Associate Publishing Director Liz Wheeler Design Director Phil Ormerod

DK INDIA

Editor Priyanka Kharbanda Art Editors Supriya Mahajan, Heena Sharma Assistant Editor Deeksha Saikia Assistant Art Editor Tanvi Sahu DTP Designers Vishal Bhatia, Nityanand Kumar Picture Researcher Deepak Negi Senior DTP Designer Harish Aggarwal Jacket Designer Vikas Chauhan Managing Jackets Editor Saloni Talwar Pre-production Manager Balwant Singh Production Manager Pankaj Sharma Managing Editor Kingshuk Ghoshal Managing Art Editor Govind Mittal

First published in Great Britain in 2015 by Dorling Kindersley Limited 80 Strand, London WC2R ORL

Copyright © 2015 Dorling Kindersley Limited

A Penguin Random House Company 24681097531 001-275156-04/15

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 written permission of the copyright owner.

A CIP catalogue record for this book is available from the British Library.

ISBN 978-0-2411-8419-6

Printed in China

Discover more at www.dk.com

MYSTERIOUS UNIVERSE

How big is the Universe?	6
The star that redrew the cosmos	1
Expanding Universe	1
Welcome to the multiverse	1
We are all doomed!	2
Catch up with the stellar speed demons	2
Meet the smelly dwarf	3
Mercury's secrets	3
How to catch a comet	3
Saturn's amazing rings	4
The search for alien life	4
The hostile blue planet	4
The space rock that "killed" Pluto	5



ÚK PdF MU BRNO

Lokace: DEPOZITÁR

Př.č. 113003 Sign. 1-8512

TO BOLDLY GO

The first human in space	56
Planeer 10: the little spacecraft that could	60
Woyager: our distant emissary	64
Is there life on Mars?	68
Colonizing Mars	72
Mapping the Milky Way	76
Detecting killer asteroids	78
Looking beyond Mars for life	82
A Webb to catch the oldest stars	86
ESA's Rosetta comet chaser	88
Gravity lensing to see the cosmos	92
Engage warp drive!	94
Space: the fatal frontier	96

THE APPLIANCE OF SCIENCE

It is only a theory	100
Why does anything exist?	104
Leap second	108
A weird, almost perfect Universe	111
What is dark matter?	114
Why is gravity so weak?	118
Dark matter builds the Universe	120
We are all made of stars	124
The story of the pulsar	128
Doing the black hole twist	132
Helium shortage	136
Death rays from outer space	140
Gravity slingshot	142
Is glass a liquid?	146
Curiosity: science's heart	150

TEENY, TINIY, SUPER-SMALL STUFF

The story of the atom	156
Discovering the neutron	159
The world of the insanely tiny	162
The certainty of uncertainty	164
Seeking supersymmetry	168
Higgs boson: a bluffer's guide	172
Quantum gravity	176
X-ray crystallography	179
Particle accelerators	182
Attack of the micro black holes	186
Index	190
Acknowledgments	192

