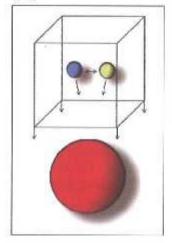
# Resonance journal of science education

March 2016 Volume 21 Number 3

213



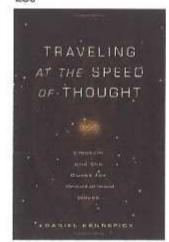
### **GENERAL ARTICLES**

213 Gravitational Waves - A New Astronomical Tool Biman Nath

225 LIGO-India An Indian Mega-Project for Gravitational-Wave Science Tarun Souradeep

233 Metabolic Engineering Biological Art of Producing Useful Chemicals Ram Kulkarni

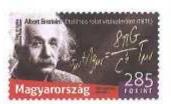
289



239 Is Calculus a Fallure in Cryptography? P Vanchinathan

247 Story of Fission Unlocking Power of the Nucleus Amit Roy

259 The Free Fall Experiment Dubravko Horvat and Radomir Jecmenica



210





#### Classroom

Syringe Chemistry

Siddharth K 277

Qualitative Carbohydrate Analysis using Alkaline 285 Potassium Ferricyanide

Sangeeta Pandita and Saral Baweja



#### Information & Announcements

Science Academies' Refresher Course in Experimental 295, **Physics** 296

## **BOOK REVIEW**

289 Such a Long Journey Rajaram Nityananda

## Front Cover



**Back Cover** 



The cover image is courtesy the LIGO website https://www.ligo.caltech.edu/image/ ligo20160211d. While it looks like an artist's fancy, it is actually a rigorous simulation of how a piece of sky would look when the light is bent by the dynamic gravitational field of the two merging black holes. This is as much a triumph of numerical relativity as the LIGO detection is of experimental optics, mechanics, and electronics.

Hermann Bondi (1919-2005) Illustration: Subhankar Biswas)

## DEPARTMENTS

Editorial

Bala lyor

203

212

Article-in-a-Box 208

Hermann Bondi Rajaram Nityananda



Science Smiles

Avan Guha

Inside Back Cover

Flowering Trees Credit: R Arun Singh, IISc