On the 150th anniversary of the birth of James Clerk Maxwell

This content has been downloaded from IOPscience. Please scroll down to see the full text.
1981 Sov. Phys. Usp. 24 875
(http://iopscience.iop.org/0038-5670/24/11/E01)

View the table of contents for this issue, or go to the journal homepage for more

Download details:
IP Address: 54.191.40.80
This content was downloaded on 27/08/2017 at 21:33

Please note that terms and conditions apply.

You may also be interested in:

James Clerk Maxwell: a force for physics
Francis Everitt

Maxwell's "Treatise on Electricity and Magnetism"
M L Levin and M A Miller

Eightieth anniversary of the birth of M. A. Leontovich

Maxwell's contribution to the development of molecular physics and statistical methods
M A El'yashevich and T S Prot'ko

Solomon Meerovich Ryvkin (Obituary)
Zhores I Alferov, B M Vul, Boris P Zakharchenya et al.

Hundredth anniversary of the work of H. Hertz on the experimental proof of the existence of the electromagnetic waves
V V Migulin

L D Landau: 100th anniversary (Introductory talk)
A F Andreev

To the memory of Boris Moiseevich Levitan (on the 100th anniversary of his birth)
V V Zhikov and A A Shkalikov

Hundredth anniversary of the birth of A. F. Ioffe: Academician A. F. Ioffe and Soviet science
A P Aleksandrov
On the 150th anniversary of the birth of James Clerk Maxwell

From the Editorial Board

PACS numbers: 01.60. + q

This year marks the 150th anniversary of the birth of James Clerk Maxwell, one of the most outstanding physicists of all time. His contributions to the development of physics are both varied and profound but, above all, his name is linked with the creation of the theory of the electromagnetic field and the formulation of the equations of electrodynamics. He was also one of the founders of statistical physics, and established the statistical distribution which, like the electrodynamic equations, bears his name. His researches in many other branches of physics are widely known. He planned the Cavendish Laboratory and was its first director. In 1931, Einstein wrote that the work of Faraday and Maxwell on electromagnetic phenomena resulted in the greatest changes in the theoretical foundations of physics since the time of Newton. The introduction of the idea of a field as a physical reality was a crucial step in the development of physics. Maxwell was able to bring together and describe in a unified way the phenomena of electricity and magnetism which, until then, had been regarded as essentially different. This tendency of physics to reach an understanding of all the interactions in nature from a common point of view can be seen clearly today in current attempts to unify electromagnetic and weak interactions, and to develop a unified theory of all natural forces.

Maxwell used his electrodynamic equations as a basis for predicting the existence of electromagnetic waves and suggested that light was electromagnetic in nature. Maxwell’s theory showed that the velocity of these waves was equal to the velocity of light. This theoretical prediction has been one of the most outstanding achievements in physics. It had an enormous effect on the subsequent development of physics (for example, in relativity) and has led to a huge number of practical applications (one of the first of which was the transmission of radiofrequency signals).

The great creative legacy of James Clerk Maxwell cannot be adequately reflected in a brief introduction. As a gesture of homage to a great scientist, this issue of Uspekhi Fizicheskikh Nauk presents a number of papers intended to help the reader to achieve greater familiarity with Maxwell’s achievements.

Translated by S. Chomet