

<<D膜>>

图书基本信息

书名：<<D膜>>

13位ISBN编号：9787510005077

10位ISBN编号：7510005078

出版时间：2010-1

出版时间：世界图书出版公司

作者：约翰逊

页数：548

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## 前言

In view of the exciting developments in our understanding of those particular aspects of fundamental physics that string theory seems to capture, it seems appropriate to collect together some of the key tools and ideas which helped move things forward. The developments included a true revolution, since the physical perspective changed so radically that it undermined the long-standing status of strings as the basic fundamental objects, and instead the idea has arisen that a string theory description is simply a special (albeit rather novel and beautiful) corner of a larger theory called 'M-theory'. This book is not an attempt at a history of the revolution, as we are (arguably) still in the midst of it, especially since we are in the awkward position of not knowing even one satisfactory intrinsic definition of M-theory, and have implicit knowledge of it only through interconnections of its various limits. All revolutions are supposed to have a collection of characters who played a crucial role in it, 'heroes' if you will. Hence, one would be expected to proceed to list here the names of various individuals. While I was lucky to be in a position to observe a lot of the activity at first hand and collect many wonderful anecdotes about how some things came to be, I will decline to start listing names at this juncture. It is too easy to yield to the temptation to emphasise a few personalities in a short space (such as this preface), and the result can sometimes be at the expense of others, a practice which happens all too often elsewhere. This seems to me to be especially inappropriate in a field where the most striking characteristic of the contributions has been the collective effort of hundreds of thinkers all over the planet, often linked by e-mail and the web, often never having met each other in person.

## &lt;&lt;D膜&gt;&gt;

## 内容概要

爱因斯坦的后半生一直致力于将引力理论，纳入量子理论体系，但没有成功。

上世纪80年代，由于在弦理论研究方面取得的巨大成果，使研究者看到新的希望。

这被称为“第一次超弦革命”。

1995年，弦理论研究迎来了第二次革命。

其具有划时代意义的发现是D-膜（brane）和M-理论。

它为人类提供了探索强耦合超弦理论的强有力工具。

后继的研究表明，它也是人类理解诸如黑洞热力学微观机制、大N规范理论与引力理论之间全息对偶等深刻而未解难题的必由之路。

本书详细介绍膜理论的方方面面。

尤其对初学者，它是J.Polchinski同类专著（String Theory, 已由世图引进）极好的补充。

本书是剑桥大学出版社出版的“数学物理”丛书之一。

剑桥大学出版社出版的“数学物理”丛书，在国际上有崇高的声望。

此类图书的引进，对国内的研究者，以及研究生都有极大的帮助。

<<D膜>>

作者简介

作者：（英国）约翰逊（Clifford.V.Johnson）

## 书籍目录

List of inserts Preface 1 Overview and overture 1.1 The classical dynamics of geometry 1.2 Gravitons and photons 1.3 Beyond classical gravity: perturbative strings 1.4 Beyond perturbative strings: branes 1.5 The quantum dynamics of geometry 1.6 Things to do in the meantime 1.7 On with the show 2 Relativistic strings 2.1 Motion of classical point particles 2.2 Classical bosonic strings 2.3 Quantised bosonic strings 2.4 The sphere, the plane and the vertex operator 2.5 Chan-Paton factors 2.6 Unoriented strings 2.7 Strings in curved backgrounds 2.8 A quick look at geometry 3 A closer look at the world-sheet 3.1 Conformal invariance 3.2 Revisiting the relativistic string 3.3 Fixing the conformal gauge 3.4 The closed string partition function 4 Strings on circles and T-duality 4.1 Fields and strings on a circle 4.2 T-duality for closed strings 4.3 A special radius: enhanced gauge symmetry 4.4 The circle partition function 4.5 Toriodal compactifications 4.6 More on enhanced gauge symmetry 4.7 Another special radius: bosonisation 4.8 String theory on an orbifold 4.9 T-duality for open strings: D-branes 4.10 D-brane collective coordinates 4.11 T-duality for unoriented strings: orientifolds 5 Background fields and world-volume actions 5.1 T-duality in background fields 5.2 A first look at the D-brane world-volume action 5.3 The Dirac-Born-Infeld action 5.4 The action of T-duality 5.5 Non-Abelian extensions 5.6 D-branes and gauge theory 5.7 BPS lumps on the world-volume 6 D-brane tension and boundary states 6.1 The D-brane tension 6.2 The orientifold tension 6.3 The boundary state formalism 7 Supersymmetric strings 7.1 The three basic superstring theories 7.2 The two basic heterotic string theories 7.3 The ten dimensional supergravities 7.4 Heterotic toroidal compactifications 7.5 Superstring toroidal compactification 7.6 A superstring orbifold: discovering the K3 manifold 8 Supersymmetric strings and T-duality 8.1 T-duality of supersymmetric strings 8.2 D-branes as BPS solitons 8.3 The D-brane charge and tension 8.4 The orientifold charge and tension 8.5 Type I from type IIB, revisited 8.6 Dirac charge quantisation 8.7 D-branes in type I 9 World-volume curvature couplings 9.1 Tilted D-branes and branes within branes 9.2 Anomalous gauge couplings 9.3 Characteristic classes and invariant polynomials 9.4 Anomalous curvature couplings 9.5 A relation to anomalies 9.6 D-branes and K-theory 9.7 Further non-Abelian extensions 9.8 Further curvature couplings 10 The geometry of D-branes 10.1 A look at black holes in four dimensions 10.2 The geometry of D-branes 10.3 Probing p-brane geometry with Dp-branes 10.4 T-duality and supergravity solutions 11 Multiple D-branes and bound states 11.1 Dp and Dp from boundary conditions 11.2 The BPS bound for the Dp-Dp' system 11.3 Bound states of fundamental strings and D-strings 11.4 The three-string junction 11.5 Aspects of D-brane bound states 12 Strong coupling and string duality 12.1 Type IIB/type IIB duality 12.2 SO(32) Type I/heterotic' duality 12.3 Dual branes from 10D string-string duality 12.4 Type IIA/M-theory duality 12.5 Es x Es heterotic string/M-theory duality 12.6 M2-branes and M5-branes 12.7 U-duality 13 D-branes and geometry I 13.1 D-branes as probes of ALE spaces 13.2 Fractional D-branes and wrapped D-branes 13.3 Wrapped, fractional and stretched branes 13.4 D-branes as instantons 13.5 D-branes as monopoles 13.6 The D-brane dielectric effect 14 K3 orientifolds and compactification 14.1 ZN orientifolds and Chan-Paton factors 14.2 Loops and tadpoles for ALE ZM singularities 14.3 Solving the tadpole equations 14.4 Closed string spectra 14.5 Open string spectra 14.6 Anomalies for N=1 in six dimensions 15 D-branes and geometry II 15.1 Probing p with D(p-4) 15.2 Probing six-branes: Kaluza-Klein monopoles and M-theory 15.3 The moduli space of 3D supersymmetric gauge theory 15.4 Wrapped branes and the enhancon mechanism 15.5 The consistency of excision in supergravity 15.6 The moduli space of pure glue in 3D 16 Towards M- and F-theory 16.1 The type IIB string and F-theory 16.2 M-theory origins of F-theory 16.3 Matrix theory 17 D-branes and black holes 17.1 Black hole thermodynamics 17.2 The Euclidean action calculus 17.3 D=5 Reissner-NordstrSm black holes 17.4 Near horizon geometry 17.5 Replacing T4 with K3 18 D-branes, gravity and gauge theory 18.1 The AdS/CFT correspondence 18.2 The correspondence at finite temperature 18.3 The correspondence with a chemical potential 18.4 The holographic principle 19 The holographic renormalisation group 19.1 Renormalisation group flows from gravity 19.2 Flowing on the Coulomb branch 19.3 An N=1 gauge dual RG flow 19.4 An N=2 gauge dual RG flow and the enhancon 19.5 Beyond gravity duals 20 Taking stock References Index

<<D膜>>

## 章节摘录

插图：A closer look at the world..sheetThe careful reader has patiently suspended disbelief for a while now , allowing US to race through a somewhat rough presentation of some of the highlights of the construction of consistent relativistic strings. This en.  
abled US , by essentially stringing lots of oscillators together , to go quite far in developing our intuition for how things work , and for key aspects of the language. Without promising to suddenly become rigorous , it seems a good idea to revisit some of the things we went over quickly, in order to unpack some more details of the operation of the theory. This will allow US to develop more tools and language for later use , and to see a bit further into the structure of the theory.

### 3.1 Conformal invariance

We saw in section 2.2.8 that the use of the symmetries of the action to fix a gauge left over an infinite dimensional group of transformations which we could still perform and remain in that gauge. These are conformal transformations , and the world-sheet theory is in fact conformally invariant. It is worth digressing a little and discussing conformal invariance in arbitrary dimensions first , before specialising to the case of two dimensions. We will find a surprising reason to come back to conformal invariance in higher dimensions much later , so there is a point to this.

<<D膜>>

编辑推荐

《D膜》是由世界图书出版公司出版的。



<<D膜>>

#### 版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>