

PHYSICS: FUNDAMENTAL PROPERTIES

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SURVEY THE TOPIC

- Bloomfield, *How Things Work: physics of everyday life*, QC--21.2.B59 1996
- Christianson, *Isaac Newton and the Scientific Revolution*, QC--16.N7 C52 1996
- Feynman, *Six Easy Pieces*, QC--21.2.F52 1994
- Introductory Physics Notes, <http://theory.uwinnipeg.ca/physics/index.html> (University of Winnipeg)
- Kirkpatrick, *Physics: a world view*, 3rd, QC--23.K46 1998
- Magie, *A Source Book in Physics*, 1963
- Speyer, *Six Roads from Newton; great discoveries in physics*, QC--21.2.S647 1994
- Stevens, *Six Core Theories of Modern Physics*, QC--21.2.S688 1995

CLARIFY TERMS

- Lerner & Trigg, *Encyclopedia of Physics*, 2nd, 1990
- Trigg, *Encyclopedia of Applied Physics*, 23 volumes, 1996
- Thewlis, *Encyclopedic Dictionary of Physics*, 1975
- The Net Advance of Physics, <http://web.mit.edu/afs/athena.mit.edu/user/r/e/redingtn/www/netadv/welcome.html>
- Physics and Astronomy Classification Scheme (PACS), <http://publish.aps.org/PACS/pacsgen.html>
- PhysLink, <http://www.physlink.com/>

FIND MORE

EXPERTS

- American Association of Physics Teachers, <http://www.aapt.org/>
- American Institute of Physics, <http://www.aip.org/>
- Google Physics & Chemistry Library links, http://directory.google.com/Top/Reference/Libraries/Subject_Specific/Science/Physical_and_Chemical_Sciences/
- Physics & Astronomy Academic Departments, <http://www.physlink.com/Directories/Departments/Index.cfm>

FIND BOOKS, MAGAZINE ARTICLES & INTERNET SITES

- Current Physics Index* (Abstracts of articles since 1975, updated quarterly, by the American Institute of Physics.)
- Eric Weisstein's Treasure Trove of Physics, <http://www.treasure-troves.com/physics/> (Immense, organized lists of resources)
- General Science Index* (Abstracts of articles since 1984)
- Google Physics links, <http://directory.google.com/Top/Science/Physics/>
- Inspec (Abstracts of articles in physics, electronics and computing from 1968, updated weekly by the IEE.)
- Sci Net Physics links, <http://www.scinet.cc/cgi-bin/search/hyperseek.cgi?search=CAT&Category=Physics>
- Web of Science *ISI Science Citation Index* (Abstracts since 1945, updated weekly)
- Searchable Physics Information Notices, <http://ojps.aip.org/spinweb/>

NEWS SOURCES

- Eureka Alert Chemistry & Physics, <http://www.eurekaalert.org/bysubject.php?kw=60>
- Nature, <http://www.nature.com/nature/>

New Scientist, <http://www.newscientist.com/> (Well-written UK weekly)
New York Times Science Section, <http://www.nytimes.com/pages/science/index.html>
Physics Today, <http://www.physicstoday.org/>
Physics Web, <http://physicsweb.org/TIPTOP/>
Science, <http://www.sciencemag.org/>

PHYSICS A - Z:

ASTRONOMY & ASTROPHYSICS

American Astronomical Society, <http://www.aas.org/>
Astronomy Hypertextbook, <http://zebu.uoregon.edu/text.html>
Astronomy: Observatories, <http://www.webhead.com/WWWVL/Astronomy/observatories.html> (Links to optical, radio, space & other)
Astronomy Unbound: a virtual astronomy text, http://www.herts.ac.uk/astro_ub/astro_ub.html#Definitions
Astroweb: astronomy/astrophysics on the Internet, <http://www.stsci.edu/astroweb/astronomy.html>
Eureka Alert Space/Planetary, <http://www.eurekaalert.org/bysubject.php?kw=252> (News)
The Facts on File Dictionary of Astronomy, QB--14 .F3 1985
Henbest, *New Astronomy*, 2nd, QB--43.2.H463 1996
Hoskin, *Cambridge Concise History of Astronomy*, 1999
Karttunen, *Fundamental Astronomy*, 2nd, QB--43.2.T2613 1996
The Nine Planets: multimedia tour of the solar system, <http://www.seds.org/billa/tnp/>
North, *The Norton History of Astronomy and Cosmology*, 1994
Pulsar's Astronomy Links, <http://www.users.dircon.co.uk/~jnwebb/links.htm> (Exhaustive personal page of links)
Solar System Live, <http://www.fourmilab.to/solar/>
Treasure Trove Astrophysics Bibliography, <http://www.treasure-troves.com/physics/Astrophysics.html>
Zelik, *Astronomy: evolving universe*, QB--45.Z428 1997

COSMOLOGY

Davies, *The Last Three Minutes*, QB-982.D38 1994
Foundations of Modern Cosmology, <http://www.astro.virginia.edu/~jh8h/Foundations/contents.html> (University of Virginia)
The Official String Theory Web Site, <http://superstringtheory.com/>
Padmanabhan, *Cosmology and Astrophysics Through Problems*, QB-981.P244 1996
Weinberg, *The First Three Minutes*, QB-981.W48

THE ATOM

ABC's of Nuclear Science, <http://www.lbl.gov/abc/index.html>
Atomic Physics Links, http://www.phys.lnl.gov/N_Div/atomic.html
Elementary Particle Physics Glossary, <http://hepwww.ph.qmw.ac.uk/epp/glossary.html>
European Organization for Nuclear Research (CERN), <http://welcome.cern.ch/welcome/gateway.html>
Glossary of Nuclear Terms, <http://www.uilondon.org/info/inf51.htm>
High Energy Physics Information Center, <http://www.hep.net/>
"Interview with R. Wilson," *Arts & Architecture*, v. 3, no. 1, 1984 (On Fermilab National Accelerator)
Nuclear Physics Research Institutes, <http://www.rarf.riken.go.jp/rarf/np/nplab.html>
The Particle Adventure, <http://www.particleadventure.org/>
The Review of Particle Physics, <http://www-pdg.lbl.gov/>
Schwartz, *Tour of the Subatomic Zoo*, 2nd, QC-793.24.S34 1997
Stanford Linear Accelerator Center, <http://www.slac.stanford.edu/>
Wehr, *The Physics of the Atom*, QC-173 .W42 1984
Weinberg, *The discovery of subatomic particles*, QC-793.2 .W44 1990

CLASSICAL MECHANICS (or *Mechanics*) is the study of the motions of material bodies gravity. the motions of celestial objects, ordinary objects on Earth, and the behavior of atoms. It is "classical" in the sense of being formulated prior to relativity and quantum mechanics.

Asimov, *Understanding Physics, v. 1, Motion, Sound and Heat*, QC--23.A8 v. 1
Bloomfield, *How Things Work; the physics of everyday life*, QC--21.2.B59 1996
Bloomfield, *How Things Work* question & answer page, <http://howthingswork.virginia.edu/>
Ciufolini, *Gravitation and Inertia*, QC-173.59.G44 C58 1995
Classical Mechanics links, <http://web.mit.edu/afs/athena.mit.edu/user/r/e/readingt/www/netadv/class.html>
Duhem, *Aim and Structure of Physical Theory*, 1991
Galileo, *Dialogues on the Two New Sciences*, QC-123.G27
MacLachlan, *Galileo Galilei: First Physicist*, QC--16.G35 M33 1996
Supplee, *Everyday Science Explained*, 1999

ELECTROMAGNETISM is the fundamental property of electric charge. Related topics include electric forces between electron and proton, attraction and repulsion, and fields associated with charge such as magnetism.

Britney's Guide to Semiconductor Physics, <http://britneyspears.ac/lasers.htm> (Not to be believed)

Magnet and Magnetism FAQ, <http://www.wondermagnet.com/dev/magfaq.html>

Simpson, *Maxwell on the Electromagnetic Field; guided study*, QC-665.E4 S554 1997

VRML Gallery of Electromagnetism, <http://physics.syr.edu/courses/vrml/electromagnetism/>

ENERGY

Asimov, *Understanding Physics, v. 1, Motion, Sound and Heat*, QC--23.A8 v. 1

Bisio, *Wiley Encyclopedia of Energy & the Environment*, TJ-163.235.W55 1996 volumes 1 & 2

Virtual Library of Energy Science and Technology, <http://www.osti.gov/energyfiles/>

Fermi, *Thermodynamics*, QC-311.F47 1956

1st, 2nd & 3rd laws of thermodynamics, <http://www.cchem.berkeley.edu/~chem130a/sauer/outline/firstlaw.html> (UC, Berkeley)

Thermodynamics web directory, http://tigger.uic.edu/~mansoori/Thermodynamics.Educational.Sites_html (UI, Chicago)

HISTORIES OF PHYSICS

American Institute of Physics, The Center for History of Physics, <http://www.aip.org/history/s-indx.htm>

Gillispie, *Dictionary of Scientific Biography*, 1981

Guillen, *Five Equations that Changed the World*, QC--24.5.G86 1995

Home, *History of Classical Physics: a selected, annotated bibliography*, 1984

Holton & Brush, *Physics, the Human Adventure: from Copernicus to Einstein and Beyond*, 2000

Huff, *The Rise of Early Modern Science: Islam, China and the West*, 1993

Lloyd, *Early Greek Science: Thales to Aristotle*, Q-127.G7 L57 1971

Lloyd, *Greek Science after Aristotle*, Q-127.G7 L58

Pickering, *Constructing Quarks: a sociological history of particle physics*, 1984

Society for the History of Technology (SHOT), <http://shot.press.jhu.edu/>

Weaver, *The World of Physics: a small library of the literature of physics*, 3 volumes, 1987 (Anthology)

LIGHT & THE ELECTROMAGNETIC SPECTRUM

Byrne, *Readings on Color; v.2, science of color*, QC-495.R32 1997 v.2

The Electromagnetic Spectrum, http://imagine.gsfc.nasa.gov/docs/science/know_l2/emspectrum.html (NASA)

IES, *Lighting Handbook*, 8th, Reference-TK4125.L55

Johnson, *Optics and Optical Instruments*, QC-537.J6 1960

Livingston, *Color and Light In Nature*, QC-355.2.L96 1995

The Optical Society of America, <http://www.aapt.org/>

Park, *The Fire Within the Eye*, QC-352.P34 1997

Septter, *Newton's Optical Writings; guided study*, QC-353.S46 1993

Zajonc, *Catching the Light; history of light and mind*, QC-352.Z35 1993

MEASUREMENT

A Dictionary of Units, <http://www.ex.ac.uk/cimt/dictunit/dictunit.htm>

Dilke, *Mathematics & Measurement*, QA22.D55 1988

Fundamental Physical Constants, <http://physics.nist.gov/cuu/Constants/>

International Office of Weights and Measures (BIPM), <http://www.bipm.org/links/welcome.shtml>

Koyré, *Metaphysics & Measurement: essays in scientific revolution*, Q175.K8674 1992

Laboratory Equipment Online, <http://www.laboratoryequipment.com/>

Laboratory Network Com, <http://www.laboratorynetwork.com/>

National Metrology Laboratories, <http://www.nist.gov/oiaa/national.htm> (International directory & links)

Poovey, *A History of the Modern Fact*, HA--29.P6739 1998

Regional Organizations and Metrology Systems, <http://www.nist.gov/oiaa/reg-orgs.htm> (Directory & links)

National Institute of Standards & Technology, <http://www.nist.gov/> (See "Calibration services")

National Standards Bodies, <http://www.nist.gov/oiaa/std-org.htm> (Directory & links)

Physical Quantities, Units and Universal Constants, http://www.herts.ac.uk/astro_ub/a_units.html

Physical Reference Data, <http://physics.nist.gov/PhysRefData/>

PSEUDOSCIENCE

Bad Astronomy, <http://www.badastronomy.com/>

The Crackpot Index, <http://math.ucr.edu/home/baez/crackpot.html> (32 criteria by John Baez)

Google Alternative Physics links, <http://directory.google.com/Top/Science/Physics/Alternative/>

Ross, *Science Wars*, Q-175.55.S294 1996

Sokol, "Transgressing the Boundaries: towards a transformative hermeneutics of quantum gravity,"
<http://www.sablesys.com/sokal.html>

QUANTUM MECHANICS (or wave mechanics) the mechanics developed post-1900 concerning matter, electromagnetic radiation, especially concerning description of subatomic phenomena,

Albert, *Quantum Mechanics and Experience*, QC--39.A4 1992

Dirac, *Principles of Quantum Mechanics*, 4th, QC-174.3.P5 1958

Fine, *Shakey Game; Einstein, Realism & the quantum theory*, 2nd, QC---6.F54 1997

Intro to Quantum Mechanics, <http://www-theory.chem.washington.edu/~trstedl/quantum/quantum.html> (University of Washington)

Jauch, *Are Quanta Real?* QC-174.12.J38 1989

Measurement in quantum mechanics FAQ, <http://www.mtnmath.com/faq/meas-qm.html>

Peebles, *Quantum Mechanics*, QC-174.12.P4 1992

RELATIVITY a general theory of physics initially formulated by Einstein in 1905 ("Special Relativity") and in 1915 ("General Relativity"), based on the principles of the constancy of the speed of light and the elimination of the notion of simultaneity (i.e. relativity). especially fruitful with regard to cosmology, gravity, space and time

Bohm, *Special Theory of Relativity*, QC-173.65.B64 1989

Einstein, *Relativity; special and the general theory*, QC-173.55.E384513 1961

Epstein, *Relativity visualized*, QC-173.55 .E67 1992

The Light Cone: a visual introduction to relativity, <http://physics.syr.edu/courses/modules/LIGHTCONE/>

Tolman, *Relativity, Thermodynamics and Cosmology*, QC-173.65.T65 1987

What's So Special About Relativity? <http://archive.ncsa.uiuc.edu/Cyberia/NumRel/SpecialRel.html>

REPRESENTATIONS OF PHYSICS IN ART, LITERATURE, MOVIES

ART

Kemp, *The Science of Art: optical themes in western art from Brunelleschi to Seurat*, ND1475 .K46 1990

Picture of the Week, http://hepweb.rl.ac.uk/ppUKpics/pr_pow.html

LITERATURE

Brecht, Galielo, XXX

Durrenmatt, *The Physicists*, XXX

Emter, *Literatur und Quantentheorie*, 1995

Frayn, *Copenhagen*, 2000

Lightman, *Einstein's Dreams*, 1993

Lucretius, *The Nature of Things*, 1st century b.c.

Nadeau, *Readings from the New Book on Nature*, 1981

Serres, *The Birth of Physics*, 2000

Strehle, *Fiction in the Quantum Universe*, 1992

MOVIES

Bad Physics in Movies, <http://www.sfu.ca/~stieu/badphys-movies.html>

Krauss, *The Physics of Star Trek*, 1996

Science Fiction Resource Guide, <http://www.sflovers.org/SFRG/>

SOUND & VIBRATION

Acoustical Society of America, <http://asa.aip.org/>

Acoustics FAQ, <http://www.campanellaacoustics.com/faq.htm>

Blackstock, *Fundamentals of Physical Acoustics*, 2000

Crocker, *Encyclopedia of Acoustics*, QC-221.5.E53 1997 volumes 1-4

Filippi et al., *Acoustics: basic physics, theory and methods*, 1998

Find Sounds, <http://www.findsounds.com/> ("The search engine for finding sound effects on the Web")

Google Acoustics links, http://directory.google.com/Top/Science/Technology/Acoustics,_Ultrasound_and_Vibration/

"Sound & Acoustics," *Kappe Library Guide* #60

WWW Virtual Library Acoustics & Vibrations, <http://www.ecgcorp.com/velav/>

SPACE

Capek, *The Concepts of Space and Time*, 1976 (Anthology)

Grant, *Much Ado About Nothing: theories of space and the vacuum*, 1981

Hawking, *Nature of Space and Time*, QC-173.59.S65 HA 1995

Hugget, *Space from Zeno to Einstein*, QC---6.S6625 1997 (Anthology)

Jammer, *Concepts of Space*, QC-173.59.S65 J36 1993

Koyré, *From the Closed World to the Infinite Universe*, 1975

"Space," and "Spacetime" *Routledge Encyclopedia of Philosophy*, Reference-B--61.R68 1998
Wheeler, *A Journey into Gravity and Spacetime*, QB-334 .W49 1990

TIME

Coveney, *The Arrow of Time*, QB-209.C64 1991
Dohrn van Rossum, *History of the Hour: clocks & modern temporal orders*, QB-107.D6413 1996
Flood & Lockwood, *The Nature of Time*, 1986
Macey, *Encyclopedia of Time*, QB-209.E52 1994
Pickover, *Time: a Traveller's Guide*, QC-173.59.S65 P53 1998
Price, *Time's Arrow & Archimedes' Point : New Directions for the Physics of Time*, BD-638.P73 1996
Space & Time in Special Relativity, <http://www.phy.ntnu.edu.tw/~hwang/relativity/relativity.html> (Taiwan Normal U.)
"Time," "Space," *Routledge Encyclopedia of Philosophy*, Reference-B--61.R68 1998

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