

*Pathfinder*

*for*

**QUANTUM MECHANICS**  
*(Graduate Program)*

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## Introduction

A pathfinder is a guide to the resources in a particular subject area in the library. It is an instruction/research tool designed to encourage researchers to do a self-directed use of the library.

The Science and Technology Library provide pathfinders basically to support students and faculty in their search for recorded literature and resources available at the USC Library System and accessible on the web.

Should you have comments, questions and suggestions on this pathfinder, please contact Science and Technology Library at 2300100 local 193 or email to [stsumalinog@usc.edu.ph](mailto:stsumalinog@usc.edu.ph)

Key Term : Quantum Mechanics

Scope : science dealing with the behaviour of matter and light on the atomic and subatomic scale. It attempts to describe and account for the properties of molecules and atoms and their constituents—electrons, protons, neutrons, and other more esoteric particles such as quarks and gluons. These properties include the interactions of the particles with one another and with electromagnetic radiation (i.e., light, X-rays, and gamma rays).

Source: Squires, G. Leslie (2021, June 1). *Quantum mechanics*. *Encyclopedia Britannica*. <https://www.britannica.com/science/quantum-mechanics-physics>.

Use Quantum Theory

UF Quantum dynamics  
Quantum mechanics  
Quantum physics

BT Physics

RT Mechanics

Thermodynamics

NT Basis sets (Quantum mechanics)

Bell's theorem

Born approximation

Causality (Physics)

Clebsch-Gordan coefficients

Commutation relations (Quantum mechanics)

Complementarity (Physics)

Correspondence principle (Quantum mechanics)

Density matrices

Dispersion relations

Einstein-Podolsky-Rosen experiment

Energy-band theory of solids

Energy levels (Quantum mechanics)

Exciton theory

Factorization method (Quantum theory)

Few-body problem

Feynman diagrams

Geometric quantization

Geometric quantum phases

Gleason measures

Hamiltonian operator

## **BOOKS AVAILABLE AT THE SCIENCE & TECHNOLOGY LIBRARY**

- Auletta, G. (2009). *Quantum mechanics*. Cambridge University Press. **(ST 530.12 Au51)**
- Blümel, R. (2010). *Foundations of quantum mechanics: from photons to quantum computers*. Jones and Bartlett Publishers. **(ST 530.12 B62)**
- Blümel, R. (2011). *Advanced quantum mechanics the classical-quantum connection*. Jones and Bartlett Publishers. **(ST 530.12 B62)**
- Bub, T. (2018). *Totally random: why nobody understands quantum mechanics (a serious comic on entanglement)*. Princeton University Press. **(ST 539.725 B85)**
- Desai, B. R. (2010). *Quantum mechanics with basic field theory*. Cambridge University Press. **(ST 530.12 D45)**
- Elements of quantum information* (2007). Wiley-VCH **(ST 004.1 E126)**
- Fritzsche, H. (2017). *Quantum field theory*. World Scientific. **(ST 530.143 F91)**
- Gitterman, M. (2012). *A brief tour of modern quantum mechanics*. World Scientific. **(ST 530.12 G44)**
- Griffiths, D. J. (2005). *Introduction to quantum mechanics. 2<sup>nd</sup> ed.* Pearson Prentice Hall. **(ST 530.12 G87)**
- House, J. E. (2018). *Fundamentals of quantum mechanics. 3<sup>rd</sup> ed.* Elsevier/Academic Press. **(ST 530.12 H81)**
- Levi, A. F. J. (2006). *Applied quantum mechanics. 2<sup>nd</sup> ed.* Cambridge University Press. **(ST 530.12 L57)**

Liboff, R. L. (2003). *Introductory quantum mechanics*. 4<sup>th</sup> ed. Addison-Wesley **(ST 530.12 L61)**

McIntyre, D. H.(2012). *Quantum mechanics: a paradigms approach*. Pearson. **(ST 530.12 M45)**

Metiu, H. (2006). *Physical chemistry. Quantum mechanics*. Taylor & Francis Group.  
**(ST 530.12 M56)**

Miller, D. A. B. (2008). *Quantum mechanics for scientists and engineers*. Cambridge University Press. **(ST 530.12 M61)**

Mueller-Kirsten, H.J.W. (2012). *Introduction to Quantum Mechanics: Schrödinger Equation and Path Integral*. World Scientific. **(ST 530.12 M91)**

Reed, B.C. (2008). *Quantum mechanics*. Jones and Bartlett Publishers. **(ST 530.12 R25)**

Schieve, W. C.(2009). *Quantum statistical mechanics*.Cambridge University Press.  
**(ST 530.133 Sch32)**

*Semantic techniques in quantum computation (2010)*. Cambridge University Press.  
**(ST 004.1 Se51)**

Tang, C. L. (2005). *Fundamentals of quantum mechanics: for solid state electronics and optics*. Cambridge University Press **(ST 530.12 T15)**

Tarasov, V. E. (2008). *Quantum mechanics of non-Hamiltonian and dissipative systems*. Elsevier. **(ST 530.12 T17)**

Townsend, J. S. (1992). *A modern approach to quantum mechanics*. McGraw-Hill.  
**(ST 530.12 T66)**

Zettili, N. (2009). *Quantum mechanics: concepts and applications*.2<sup>nd</sup> ed. Wiley.  
**(ST 530.12 Z57)**

## **ELECTRONIC RESOURCES**

### **Quantum mechanics: into a modern perspective / Gennaro Auletta, Mauro Fortunato, Giorgio Parisi.**

- <http://www.loc.gov/catdir/enhancements/fy0906/2009004303-b.html>
- <http://www.loc.gov/catdir/enhancements/fy0906/2009004303-d.html>
- <http://www.loc.gov/catdir/enhancements/fy0906/2009004303-t.html>

### **Quantum mechanics / Bruce Cameron Reed**

- <http://www.loc.gov/catdir/toc/ecip0713/2007011157.html>

### **Quantum mechanics / Claude Cohen-Tannoudji, Bernard Diu, Franck Laloe; translated from the French by Susan Reid Hemley, Nicole Ostrowsky, Dan Ostrowsky.**

- <http://www.loc.gov/catdir/toc/wiley023/76005874.html>
- <http://www.loc.gov/catdir/enhancements/fy0607/76005874-b.html>
- <http://www.loc.gov/catdir/enhancements/fy0607/76005874-d.html>

### **Quantum mechanics for scientists and engineers / David A.B. Miller**

- <http://www.loc.gov/catdir/enhancements/fy0809/2008001249-b.html>
- <http://www.loc.gov/catdir/enhancements/fy0809/2008001249-d.html>
- <http://www.loc.gov/catdir/enhancements/fy0809/2008001249-t.html>

### **Introductory quantum mechanics / Richard L. Liboff.**

- <http://www.loc.gov/catdir/toc/fy034/2002511525.html>

### **Quantum statistical mechanics: perspectives / William C. Schieve, Lawrence P. Horwitz.**

- <http://www.loc.gov/catdir/enhancements/fy0903/2008047238-t.html>
- <http://www.loc.gov/catdir/enhancements/fy0903/2008047238-d.html>
- <http://www.loc.gov/catdir/enhancements/fy0903/2008047238-b.html>

**Physical chemistry: quantum mechanics / Horia Metiu**

- <http://www.loc.gov/catdir/toc/ecip063/2005032155.html>
- <http://www.loc.gov/catdir/enhancements/fy0652/2005032155-d.html>

**Applied quantum mechanics / A.F.J. Levi.**

- <http://www.loc.gov/catdir/enhancements/fy0668/2006282212-d.html>
- <http://www.loc.gov/catdir/enhancements/fy0668/2006282212-t.html>
- <http://www.loc.gov/catdir/enhancements/fy0733/2006282212-b.html>

**Advanced quantum mechanics [electronic resource] by Dyson, Freeman J.**

- <http://www.worldscientific.com/worldscibooks/10.1142/8356#t=to>

**Understanding our unseen reality solving quantum riddles / [electronic resource]:  
by Kastner, Ruth E**

- <http://www.worldscientific.com/worldscibooks/10.1142/P993#t=to>

## **ONLINE DATABASES**

Log in to our Ezproxy (<https://www.ezproxy.usc.edu.ph>) to access our Online Databases or via your ISMIS account to find articles on your subject:

**SCIENCE DIRECT-** is a website which provides subscription-based access to a large database of scientific and medical research. It hosts over 12 million pieces of content from 3,500 academic journals and 34,000 e-books.

**EBSCO HOST-** the leading provider of research databases, e-journals, magazine subscriptions, e-books and discovery service to libraries of all kinds. For more than 70 years, we've partnered with libraries to improve research with quality content and technology.

**Cengage Powerpack/GVRL e-Books-** Knowledge is power, and the act of learning is empowering. Access to knowledge offers learners an opportunity to discover the motivation and inspiration vital to making a positive contribution in not only their own lives, but the rest of the world. That's why Gale provides libraries with original and curated content, as well as the modern research tools that are crucial in connecting libraries to learning, and learners to libraries.

**Digital Resources for the Consortium of Engineering Libraries – Philippines (CELPh)** Contain the current list of accessible titles to the library users of the Consortium of Engineering Libraries – Philippines (CELPh) member institutions classified into subject categories & content types. Access these digital resources by clicking on the links.

**Philippine e-Journals- (PEJ)** is an online collection of academic publications of different higher education institutions and professional organizations. Its sophisticated database allows users to easily locate abstracts, full journal articles, and links to related research materials.

**WILEY ONLINE LIBRARY-** One of the largest and most authoritative collections of online journals, books, and research resources, covering life, health, social, and physical sciences.

**PROQUEST ONE ACADEMIC-** access to the world's largest curated collection of journals, ebooks, dissertations, news, video and primary sources, all in one place. With ProQuest One Academic, four core multi-disciplinary products – ProQuest Central, Academic Complete, Academic Video Online and ProQuest Dissertations & Theses Global – are now available and cross-searchable on the same user-friendly, responsive, mobile-enabled ProQuest platform.



## **OPEN EDUCATIONAL RESOURCES (OERS)**

### **STEM in Context: Introduction to Quantum Mechanics**

- <https://letstalkscience.ca/educational-resources/stem-in-context/introduction-quantum-mechanics>

### **MERLOT: Quantum Mechanics**

- <https://www.merlot.org/merlot/materials.htm?keywords=QUANTUM+MECHANICS&sort.property=relevance>

### **Khan Academy: Quantum Mechanics**

- [https://www.khanacademy.org/search?page\\_search\\_query=quantum%20mechanics](https://www.khanacademy.org/search?page_search_query=quantum%20mechanics)

### **MITOpenCourseWare: Quantum Mechanics**

- <https://ocw.mit.edu/search/ocwsearch.htm?q=quantum%20mechanics>

### **edX Courses: Quantum Mechanics**

- <https://www.edx.org/search?q=quantum%20mechanics>

### **LiveScience: Quantum Mechanics**

- <https://www.livescience.com/search?searchTerm=Quantum+mechanics>

### **OER Commons: Quantum Mechanics**

- <https://www.oercommons.org/search?f.search=Quantum+mechanic>

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