

# Condensed Matter In A Nutshell

Gerald Mahan He is also developed the time-dependent local-density approximation (TDLDA) and its author of various books in quantum many-body physics. 1937 – November 21, 2021) was an American condensed matter physicist, with specific research interests in transport and optical properties of materials Gerald Dennis Mahan (November 24, 1937 – November 21, 2021) was an American condensed matter physicist, with specific research interests in transport and optical properties of materials, and solid-state devices. He is recognized for his work in quantum thermoelectricity and the invention of the zinc oxide varistor e954dfc8a6

The duality represents a major advance in the understanding of string theory and quantum gravity. This is because it provides a non-perturbative formulation of string theory with certain boundary conditions and because it is the most successful realization of the holographic... e954dfc8a6

Cosmos The Chinese believed that the Earth consisted of condensed yin and the heavens of yang; and that these properties coexisted in constant The cosmos (, US also ; Ancient Greek: κόσμος, romanized: kósmos) is an alternative name for the universe or its nature or order. of condensed vapor. Usage of the word cosmos implies viewing the universe as a complex and orderly system or entity e954dfc8a6

Anthony Zee He is also the author Anthony Zee (Chinese: 曾江, born 1945) (Zee comes from /zi23/, the Shanghainese pronunciation of 江) is a Chinese-American physicist, writer, and a professor at the Kavli Institute for Theoretical Physics and the physics department of the University of California, Santa Barbara. level textbooks: Quantum Field Theory in a Nutshell, Einstein Gravity in a Nutshell, and Group Theory in a Nutshell for Physicists e954dfc8a6

String theory Thus, string theory is a theory of quantum gravity. String theory describes how these strings propagate through space and interact with each other. On distance scales larger than the string scale, a string acts like a particle, with its mass, charge, and other properties determined by the vibrational state of the string. to a variety of problems in black hole physics, early universe cosmology, nuclear physics, and condensed matter physics, and it has stimulated a number In physics, string theory is a theoretical framework in which the point-like particles of particle physics are replaced by one-dimensional objects called strings. In string theory, one of the many vibrational states of the string corresponds to the graviton, a quantum mechanical particle that carries the gravitational force e954dfc8a6

Gravity is described by the general theory of relativity, proposed by Albert Einstein in 1915, which describes gravity in terms... e954dfc8a6 String theory is a broad and varied subject that attempts to address a number of deep questions of fundamental physics. String theory has contributed a... e954dfc8a6

Ronald Fuchs &quot;A Portrait of Ronald Fuchs on his 75th Birthday&quot; (PDF). Universidad Nacional Autónoma de México UNAM. He is recognized for his work on electromagnetic properties of solids, light scattering of small particles and nonlocal optical phenomena. Mahan, Gerald D. (2011). Condensed Matter in a Nutshell Ronald Fuchs (January 27, 1932 – November 10, 2012) was an American theoretical physicist and professor at Iowa State University e954dfc8a6

The gravitational attraction between clouds of primordial hydrogen and clumps of dark matter in the early universe caused the hydrogen gas to coalesce, eventually condensing and fusing to form stars. At larger scales this resulted in galaxies and clusters, so gravity is a primary driver for the large-scale structures in the universe.

Gravity has an infinite range, although its effects become weaker as objects get farther away. The study of phonons is an important part of condensed matter physics. They play a major role in many of the physical properties of condensed matter systems, such...

**122 iron arsenide** The maximum superconducting transition temperature found to date is 38 K in the Ba0. 20 (45): 452201. They form in the tetragonal I4/mmm, ThCr2Si2 type, crystal structure. Journal of Physics: Condensed Matter. ). and magnetic phase transitions in the ternary iron arsenides SrFe2As2 and EuFe2As2". arXiv:0806. 6K0. 4Fe2As2. The shorthand name "122" comes from their stoichiometry; the 122s have the chemical formula AEF<sub>2</sub>Pn<sub>2</sub>, where AE stands for alkaline earth metal (Ca, Ba Sr or Eu) and Pn is pnictide (As, P, etc. 4782 The 122 iron arsenide unconventional superconductors are part of a new class of iron-based superconductors. These materials become superconducting under pressure and also upon doping. The microscopic description of superconductivity in the 122s is yet unclear

**Gravity** matter in the early universe caused the hydrogen gas to coalesce, eventually condensing and fusing to form stars. At larger scales this resulted in galaxies In physics, gravity (from Latin gravitas 'weight'), also known as gravitation or a gravitational interaction, is a fundamental interaction, which may be described as the effect of a field that is generated by a gravitational source such as mass

**Mahan** worked at General Electric Research Laboratory (1963–1967) and was a professor of physics at the University of Oregon (1967–1973), Indiana University (1973–1984), University of Tennessee (1984–2001), and Pennsylvania State University (2001–2021). He also worked at Oak Ridge National Laboratory (1984–2001).

**AdS/CFT correspondence** On the other side of the correspondence are conformal field theories (CFT) that are quantum field theories, including theories similar to the Yang-Mills theories that describe elementary particles. The In theoretical physics, the anti-de Sitter/conformal field theory correspondence (frequently abbreviated as AdS/CFT) is a conjectured relationship between two kinds of physical theories. aspects of nuclear and condensed matter physics by translating problems in those subjects into more mathematically tractable problems in string theory. On one side are anti-de Sitter spaces (AdS) that are used in theories of quantum gravity, formulated in terms of string theory or M-theory

**Quantum field theory** The current standard model of particle physics is based on QFT. quantum mechanics. QFT is used in particle physics to construct physical models of subatomic particles and in condensed matter physics to construct models In theoretical physics, quantum field theory (QFT) is a theoretical framework that combines field theory and the principle of relativity with ideas behind quantum mechanics. QFT is used in particle physics to construct physical models of subatomic particles and in condensed matter physics to construct models of quasiparticles

**Phonon** In the context of optically trapped objects, the quantized vibration mode can be defined as phonons as long as the modal wavelength of the oscillation is smaller than the size of the object. A type of quasiparticle in physics, a phonon is an excited state in the quantum mechanical quantization of the modes of vibrations for elastic structures of interacting particles. Phonons can be thought of as quantized sound waves, similar to photons as quantized light waves. A phonon is a quasiparticle, collective excitation in a periodic, elastic arrangement of atoms or molecules in condensed matter, specifically in solids A phonon is a quasiparticle, collective excitation in a periodic, elastic arrangement of atoms or molecules in condensed matter, specifically in solids and some liquids

The cosmos is studied in cosmology – a broad discipline covering scientific, religious or

philosophical aspects of the cosmos and its nature. Religious and philosophical approaches may include the cosmos among spiritual entities or other matters deemed to exist outside the physical universe. e954dfc8a6

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