

Manual Solution Antenna Theory

Mathematical optimization In the more Mathematical optimization (alternatively spelled optimisation) or mathematical programming is the selection of a best element, with regard to some criteria, from some set of available alternatives. It is generally divided into two subfields: discrete optimization and continuous optimization. Optimization problems arise in all quantitative disciplines from computer science and engineering to operations research and economics, and the development of solution methods has been of interest in mathematics for centuries. engineering to operations research and economics, and the development of solution methods has been of interest in mathematics for centuries 12b2b6b39f

Very low frequency The VLF band is used for a few radio navigation services, government time radio stations (broadcasting time signals to set radio clocks) and secure military communication. it, throwing the antenna out of resonance, causing the antenna to reflect some power back down the feedline. The band is also known as the myriameter band or myriameter wave as the wavelengths range from one to ten myriameters (an obsolete metric unit equal to 10 kilometers). The traditional solution is to use a "bandwidth Very low frequency or VLF is the ITU designation for radio frequencies (RF) in the range of 3–30 kHz, corresponding to wavelengths from 100 to 10 km, respectively. Due to its limited bandwidth, audio (voice) transmission is highly impractical in this band, and therefore only low-data-rate coded signals are used. Since VLF waves can penetrate at least 40 meters (130 ft) into saltwater, they are used for military communication with submarines 12b2b6b39f

FEKO com. 2016-09-22. Antenna-theory. Architecture CAE solution". It is a general purpose 3D electromagnetic (EM) simulator. Altairhyperworks. Retrieved 2016-09-28. Retrieved - Feko is a computational electromagnetics software product developed by Altair Engineering. "Antenna Simulation Software FEKO". com. The name is derived from the German acronym "Feldberechnung für Körper mit beliebiger Oberfläche", which can be translated as "field calculations involving bodies of arbitrary shape" 12b2b6b39f

In a phased array, the power from the transmitter is fed to the radiating elements through devices called phase shifters, controlled by a computer system, which can alter the phase or signal delay electronically, thus steering the beam of radio waves to a different direction. Since the size of an antenna array must extend many wavelengths to achieve the high gain needed for narrow beamwidth, phased arrays are mainly practical at the high frequency end of the radio spectrum, in the UHF and microwave bands,

in which the operating wavelengths... 12b2b6b39f In the more general approach, an optimization problem consists of maximizing or minimizing a real function by systematically choosing input values from within an allowed set and computing the value of the function. The generalization of optimization theory and techniques to other... 12b2b6b39f

Phased array In antenna theory, a phased array usually means an electronically scanned array, a computer-controlled array of antennas which creates a beam of radio In antenna theory, a phased array usually means an electronically scanned array, a computer-controlled array of antennas which creates a beam of radio waves that can be electronically steered to point in different directions without moving the antennas 12b2b6b39f

Conventional antennas that are very small compared to the wavelength reflect most of the signal back to the source. A metamaterial antenna behaves as if it were much larger than its actual size, because its novel structure stores and re-radiates energy. Established lithography techniques can be used to print... 12b2b6b39f

Maritime mobile amateur radio earth, antenna design and EMC (electromagnetic compatibility) with other electronic equipment aboard. For MF and HF use, the most common antenna design Maritime mobile amateur radio is an amateur radio transmission license that allows maritime operators to install and use radio while they operating at sea. The call sign of operators is extended by adding the suffix "MM" when transmitting at sea 12b2b6b39f

Electrical length Schelkunoff, Sergei A. Air Force Manual 52-19: Antenna Systems. Antennas: Theory and Practice In electrical engineering, electrical length is a dimensionless parameter equal to the physical length of an electrical conductor such as a cable or wire, divided by the wavelength of alternating current at a given frequency traveling through the conductor. ; Friis, Harold T. pp. US Air Force. In other words, it is the length of the conductor measured in wavelengths. 104-105. It can alternately be expressed as an angle, in radians or degrees, equal to the phase shift the alternating current experiences traveling through the conductor. (1952). 1953 12b2b6b39f

A radar system consists of a transmitter producing electromagnetic waves in the radio or microwave domain, a transmitting antenna, a receiving antenna (often the same antenna is used for transmitting and receiving) and a receiver and processor... 12b2b6b39f Instruments based on radar remote sensing techniques have become of particular interest in applications where it is important to avoid direct contact with the water surface and avoid structural interference. A typical case is wave measurements from an offshore platform in deep water, where swift currents could make mooring a wave buoy enormously difficult. Another interesting case is a ship under way, where having instruments in the sea is highly impractical and

interference from the ship... Feko originated in 1991 from research activities of Dr. Ulrich Jakobus at the University of Stuttgart, Germany. Cooperation between Dr. Jakobus and EM Software & Systems (EMSS) resulted in the commercialisation of FEKO in 1997. In June 2014, Altair Engineering acquired 100% of EMSS-S.A. and its international distributor offices in the United States, Germany and China, leading to the addition of FEKO to the Altair Hyperworks suite of engineering simulation software...

Radar in the radio or microwave domain, a transmitting antenna, a receiving antenna (often the same antenna is used for transmitting and receiving) and a receiver Radar is a system that uses radio waves to determine the distance (ranging), direction (azimuth and elevation angles), and radial velocity of objects relative to the site. It is a radiodetermination method used to detect and track aircraft, ships, spacecraft, guided missiles, and motor vehicles, and map weather formations and terrain. The term RADAR was coined in 1940 by the United States Navy as an acronym for "radio detection and ranging". The term radar has since entered English and other languages as an anacronym, a common noun, losing all capitalization

Wave radar The beam of a microwave antenna diverges. signal characteristics) and the beamwidth of the radar antenna. Consequently, the resolution decreases with increasing Wave radar is a type of radar for measuring wind waves. Several instruments based on a variety of different concepts and techniques are available, and these are all often called. This article (see also Grønlie 2004), gives a brief description of the most common ground-based radar remote sensing techniques

Metamaterial antenna I. Metamaterials on antenna solutions. However, this class of antenna incorporates metamaterials, which are materials engineered with novel, often microscopic, structures to produce unusual physical properties. // 7th International Conference on Antenna Theory and Techniques ICATT'09, Lviv, Ukraine, October Metamaterial antennas are a class of antennas which use metamaterials to increase performance of miniaturized (electrically small) antenna systems. Antenna designs incorporating metamaterials can step-up the antenna's radiated power. Their purpose, as with any electromagnetic antenna, is to launch energy into free space. [dead link] Slyusar V

Genetic algorithm Genetic algorithms are commonly used to generate high-quality solutions to optimization and search problems via biologically inspired operators such as selection, crossover, and mutation. Some examples of GA applications include optimizing decision trees for better performance, solving sudoku puzzles, hyperparameter optimization, and causal inference. highest ranking solution's fitness is reaching or has reached a plateau such that successive iterations no longer produce better results Manual inspection In computer science and operations research, a genetic algorithm (GA) is a metaheuristic inspired by the process of natural

selection that belongs to the larger class of evolutionary algorithms (EA)
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Electrical length is defined for a conductor operating at a specific frequency or narrow band of frequencies. It varies according to the construction of the cable, so different cables of the same length operating at the same frequency can have different electrical lengths. A conductor is called electrically... 12b2b6b39f

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