

Radar Principles

A system containing multiple spatially diverse monostatic or bistatic radar components with a shared area of coverage is called multistatic radar. Scintillation and glint are actually two manifestations of the same phenomenon and are most properly linked to one another in target modeling. Airborne objects can exploit the radar shadow zone and clutter zone to avoid radar detection by using a technique called nap-of-the-earth navigation.

Synthetic-aperture radar The distance the SAR device travels over a target during the period when the target scene is illuminated creates the large synthetic antenna aperture (the size of the antenna). Synthetic-aperture radar (SAR) is a form of radar that is used to create two-dimensional images or three-dimensional reconstructions of objects, such as Synthetic-aperture radar (SAR) is a form of radar that is used to create two-dimensional images or three-dimensional reconstructions of objects, such as landscapes. SAR is typically mounted on a moving platform, such as an aircraft or spacecraft, and has its origins in an advanced form of side looking airborne radar (SLAR). SAR uses the motion of the radar antenna over a target region to provide finer spatial resolution than conventional stationary beam-scanning radars. Typically, the larger the aperture, the higher the image resolution will be, regardless of whether the aperture is physical (a large antenna) or synthetic

The development of systems able to produce...

Radar Principles of Modern Radar: Basic Principles. The term radar has since entered English and other languages as an anacronym, a common noun, losing all capitalization. Holm (2010). Look up radar in Wiktionary, the free 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. The term RADAR was coined in 1940 by the United States Navy as an acronym for "radio detection and ranging". William A. ISBN 978-1891121-52-4. SciTech Publishing. It is a radiodetermination method used to detect and track aircraft, ships, spacecraft, guided missiles, and motor vehicles, and map weather formations and terrain

It appears especially at seaside level.

Scintillation (radar) (1990). Scintillation is a fluctuation in the amplitude of a target on a radar display. McGraw-Hill. It is closely related to target glint, or wander, an apparent displacement of the target from its mean position. Edde, Byron (1992). ISBN 0-07-057913-X. This effect can be caused by a shift of the effective reflection point on the target, but has other causes as well. The fluctuations can be slow (scan-to-scan) or rapid (pulse-to-pulse). Radar Handbook (2nd ed.). Skolnik, Merrill I. Radar: Principles, Technology, Applications

Radar horizon This concept is associated with the notions of radar shadow, the clutter zone, and the clear zone. It is associated with the low elevation region of performance, and its geometry depends on terrain, radar height, and signal processing. The radar horizon is a critical area of performance for aircraft detection systems, defined by the distance at which the radar beam rises enough above The radar horizon is a critical area of performance for aircraft detection systems, defined by the distance at which the radar beam rises enough above the Earth's surface to make detection of a target at the lowest level possible

Ground-penetrating radar GPR can have applications in a variety of media, including rock, soil, ice, fresh water, pavements and structures. It is a non-intrusive method of surveying the sub-surface to investigate underground utilities such as concrete, asphalt, metals, pipes, cables or masonry. This nondestructive method uses electromagnetic radiation in the microwave band (UHF/VHF frequencies) of the radio spectrum, and detects the reflected signals from subsurface structures. Ground-penetrating radar (GPR) is a geophysical method that uses radar pulses to image the subsurface. It is a non-intrusive method of surveying the sub-surface Ground-penetrating radar (GPR) is a geophysical method that uses radar pulses to image the subsurface. In the right conditions, practitioners can use GPR to detect subsurface objects, changes in material properties, and voids and cracks

Lichtenstein radar Developed by Telefunken, it was available in at least four major revisions, called FuG 202 Lichtenstein B/C, FuG 212 Lichtenstein C-1, FuG 220 Lichtenstein SN-2 and the very rarely used FuG 228 Lichtenstein SN-3. (FuG is short for Funk-Gerät, radio set). The Lichtenstein radar was among the earliest airborne radars available to the Luftwaffe in World War II and the first one used exclusively for air interception The Lichtenstein radar was among the earliest airborne radars available to the Luftwaffe in World War II and the first one used exclusively for air interception. The Lichtenstein series remained the only widely deployed airborne interception radar used by the Germans on their night fighters during the war — the competing FuG 216 through 218 Neptun mid-VHF band radar systems were meant as a potentially more versatile stop-gap system through 1944, until the microwave-based FuG 240 "Berlin" could be mass-produced; the Berlin system was still being

Doppler radar A Doppler radar is a specialized radar that uses the Doppler effect to produce velocity data about objects at a distance. This variation gives direct and highly accurate measurements of the radial component of a target's velocity relative to the radar. It does this by bouncing a microwave A Doppler radar is a specialized radar that uses the Doppler effect to

produce velocity data about objects at a distance. It does this by bouncing a microwave signal off a desired target and analyzing how the object's motion has altered the frequency of the returned signal. The term applies to radar systems in many domains like aviation, police radar detectors, navigation, meteorology, etc 11bb6b8b48

History of radar The history of radar (where radar stands for radio detection and ranging) started with experiments by Heinrich Hertz in the late 19th century that showed The history of radar (where radar stands for radio detection and ranging) started with experiments by Heinrich Hertz in the late 19th century that showed that radio waves were reflected by metallic objects. 165546 in 1904). True radar which provided directional and ranging information, such as the British Chain Home early warning system, was developed over the next two decades. However, it was not until the early 20th century that systems able to use these principles were becoming widely available, and it was German inventor Christian Hülsmeyer who first used them to build a simple ship detection device intended to help avoid collisions in fog (Reichspatent Nr. This possibility was suggested in James Clerk Maxwell's seminal work on electromagnetism 11bb6b8b48

Secondary surveillance radar SSR is based on the military identification friend or foe (IFF) technology originally developed during World War II; therefore, the two systems are still compatible. Secondary surveillance radar (SSR) is a radar system used in air traffic control (ATC), that unlike primary radar systems that measure the bearing and Secondary surveillance radar (SSR) is a radar system used in air traffic control (ATC), that unlike primary radar systems that measure the bearing and distance of targets using the detected reflections of radio signals, relies on targets equipped with a radar transponder, that reply to each interrogation signal by transmitting encoded data such as an identity code, the aircraft's altitude and further information depending on its chosen mode. Monopulse secondary surveillance radar (MSSR), Mode S, TCAS and ADS-B are similar modern methods of secondary surveillance 11bb6b8b48

Bistatic radar Conversely, a conventional radar in which the transmitter and receiver are co-located is called a monostatic radar. Conversely Bistatic radar is a radar system comprising a transmitter and receiver that are separated by a distance comparable to the expected target distance. Bistatic radar is a radar system comprising a transmitter and receiver that are separated by a distance comparable to the expected target distance 11bb6b8b48

GPR uses high-frequency (usually polarized) radio waves, usually in the range 10 MHz to 2.6 GHz. A GPR transmitter... 11bb6b8b48 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... 11bb6b8b48 Many long-range air-to-air and surface-to-air missile systems use semi-active radar homing, which is a form of bistatic radar. 11bb6b8b48

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