

Alpha Beta Gamma Rays

Radioactive source Sources can be used for A radioactive source is a known quantity of a radionuclide which emits ionizing radiation, typically one or more of the radiation types gamma rays, alpha particles, beta particles, and neutron radiation. ionizing radiation, typically one or more of the radiation types gamma rays, alpha particles, beta particles, and neutron radiation 679ab5b0e2

Natural radioactivity is the spontaneous decay of the atoms of certain isotopes into other isotopes. If the resultant isotope is not stable, it undergoes further decay until a stable isotope forms. The decay process is usually accompanied by emissions of alpha, beta, and gamma radiation. Natural gamma ray radiation is one form of spontaneous radiation emitted by unstable nuclei. Gamma (γ) radiation may be considered either as an electromagnetic wave similar to visible light or X-rays, or as a particle of photon. Gamma rays are electromagnetic radiations emitted from an atomic nucleus during radioactive... 679ab5b0e2 However, so-called long-range alpha particles from ternary fission are three times as energetic and penetrate three times as far. The helium nuclei that form 10... 679ab5b0e2 Beta particles are a type of ionizing radiation, and for radiation protection purposes, they are regarded as being more ionizing than gamma rays, but less ionizing than alpha particles. The higher the ionising effect, the greater the damage to living tissue, but also the lower the penetrating power of the radiation through matter. The ionising effect of a beta particle is caused by the particle knocking electrons from shells by either the electrostatic force or energy transfer from the beta particle to the electron by collision. They produce roughly 100 ion pairs per cm in air, this means an ion plus a released electron. 679ab5b0e2 As an irradiation source they are used in medicine for radiation therapy and in industry for such as industrial radiography, food irradiation, sterilization, vermin disinfection, and irradiation crosslinking of PVC. 679ab5b0e2 Sources can be used for irradiation, where the radiation performs a significant ionising function on a target material, or as a radiation metrology source, which is used for the calibration of radiometric process and radiation protection instrumentation. They are also used for industrial process measurements, such as thickness gauging in the paper and steel industries. Sources can be sealed in a container (highly penetrating radiation) or deposited on a surface (weakly penetrating radiation), or they can be in a fluid. 679ab5b0e2

Beta particle composition. There are two forms of beta decay, β^- decay and β^+ decay, which produce electrons and positrons, respectively. Beta particles are a type of ionizing radiation, and for radiation protection purposes, they are regarded as being more ionizing than gamma rays, but a beta particle, also called beta ray or beta radiation (symbol β), is a high-energy, high-speed electron or positron emitted by the radioactive decay of an atomic nucleus, known as beta decay 679ab5b0e2

Gamma rays are the highest-energy form of electromagnetic radiation, being physically the same as all other forms (e.g., X-rays, visible light, infrared, radio) but having (in general) higher photon energy due to their shorter wavelength. Because of this, the energy of gamma-ray photons... 679ab5b0e2

Alpha and beta male These terms were actually originally used by biologists to describe dominance hierarchies in social animals like chimpanzees and wolves; their application with regards to human behavior is widely regarded by scientists and experts as a scientific myth or a significant oversimplification. In a Alpha male and beta male are terms used to describe a perceived social hierarchy among men, originally derived from concepts in animal ethology. Alpha male and beta male are terms used to describe a perceived social hierarchy among men, originally derived from concepts in animal ethology. In a human context, an "alpha male" is typically defined as a man who is dominant, assertive, and occupies a high social or professional status, while a "beta male" is characterized as subordinate, less traditionally masculine, and having lower social standing 679ab5b0e2

Many artificial radionuclides of technological importance are produced as fission products within nuclear reactors. A fission product is a nucleus with approximately half the mass of a uranium or plutonium nucleus which is left over after such a nucleus has been "split" in a nuclear fission reaction. 679ab5b0e2

Formation evaluation gamma ray Measurement of natural emission of gamma rays in oil and gas wells are useful because shales and sandstones typically have different gamma ray levels. Natural gamma ray radiation is one form of spontaneous radiation emitted by unstable nuclei. Gamma (γ) radiation The formation evaluation gamma ray log is a record of the variation with depth of the natural radioactivity of earth materials in a wellbore. emissions of alpha, beta, and gamma radiation. In addition, the log is also used for correlation between wells, for depth correlation between open and cased holes, and for depth correlation between logging runs. Shales and clays are responsible for most natural radioactivity, so gamma ray log often is a good indicator of such rocks 679ab5b0e2

== Fission products == 679ab5b0e2

Alpha particle Alpha particles are named after the first letter in the Greek alphabet, α . Because they are identical to helium nuclei, they are also sometimes written as He^{2+} or ${}^4_2\text{He}^{2+}$ indicating a helium ion with a +2 charge (missing its two electrons). They are generally produced in the process of alpha decay but may also be produced in other ways. Once the ion gains electrons from its environment, the alpha particle becomes a normal (electrically neutral) helium atom ${}^4_2\text{He}$. The symbol for the alpha particle is α or α^{2+} . helium-4 List of alpha-emitting nuclides Nuclear physics Particle physics Radioactive isotope Rays: β Beta ray γ Gamma ray δ Delta ray ϵ Epsilon radiation Alpha particles, also called alpha rays or alpha radiation, consist of two protons and two neutrons bound together into a particle identical to the nucleus of a helium-4 atom 679ab5b0e2

The photon energy (energy of a single gamma ray) of ${}^{137}\text{mBa}$ is about 662 keV. These gamma rays can be used, for example, in radiotherapy such as for the treatment of cancer, in food irradiation, or in industrial gauges or sensors. ${}^{137}\text{Cs}$ is not widely used for industrial radiography as other nuclides, such... 679ab5b0e2 Caesium-137 is one such radionuclide. It has a half-life of 30 years, and decays by beta decay without gamma ray emission to a metastable state of barium-137 (${}^{137}\text{mBa}$). Barium-137m has a half-life of 2.6 minutes and is responsible for all of the gamma ray emission in this decay sequence. The ground state of barium-137 is stable. 679ab5b0e2

Gamma ray Rutherford initially believed A gamma ray, also known as gamma radiation (symbol γ), is a penetrating form of electromagnetic radiation arising from high-energy interactions like the radioactive decay of atomic nuclei or astronomical events like solar flares. Gamma rays were first thought to be particles with mass, like alpha and beta rays. Lower energy gamma radiation overlaps the upper end of X-ray radiation; they are distinguished by their different origins. property making them unlike alpha and beta rays. Paul Villard, a French chemist and physicist, discovered gamma radiation in 1900 while studying radiation emitted by radium. In 1903, Ernest Rutherford named this radiation gamma rays based on their relatively strong penetration of matter; in 1900, he had already named two less penetrating types of decay radiation (discovered by Henri Becquerel) alpha rays and beta rays in ascending order of penetrating power. Gamma ray photons have photon energy at the lower end from 104 eV to 107 eV; ultra-high-energy gamma rays have energies over 10¹⁴ eV 679ab5b0e2

Gamma spectroscopy Gamma rays are the highest-energy form of electromagnetic radiation, being physically the same as all other forms (e. a sample. g. Gamma-ray spectrometry, on the other hand, is the method used to

acquire a quantitative spectrum measurement. , X-rays, visible light Gamma-ray spectroscopy is the qualitative study of the energy spectra of gamma-ray sources, such as in the nuclear industry, geochemical investigation, and astrophysics 679ab5b0e2

Commonly used gamma-emitting isotopes Barium-137m Radionuclides which emit gamma radiation are valuable in a range of different industrial, scientific and medical technologies. It has a half-life of 30 years, and decays by beta decay without gamma ray emission to a metastable state of barium-137 (137m Ba). radionuclide. This article lists some common gamma-emitting radionuclides of technological importance, and their properties 679ab5b0e2

Most radioactive sources produce gamma rays, which are of various energies and intensities. When these emissions are detected and analyzed with a spectroscopy system, a gamma-ray energy spectrum can be produced. 679ab5b0e2 Alpha particles have a net spin of zero. When produced in standard alpha radioactive decay, alpha particles generally have a kinetic energy of about 5 MeV and a velocity in the vicinity of 4% of the speed of light. They are a highly ionizing form of particle radiation, with low penetration depth (stopped by a few centimetres of air, or by the skin). 679ab5b0e2 == Compactness problem == 679ab5b0e2 == Physics == 679ab5b0e2 The popularization of these terms in human contexts began in the late 20th century. Primatologist Frans de Waal's 1982 book Chimpanzee Politics suggested parallels between ape and human power structures, which led media outlets in the 1990s to apply "alpha" labels to successful business leaders. The concepts gained further visibility in the late 1990s and early 2000s through political commentary and the emergence of the pickup artist (PUA) community, which presented "alpha" status as an aspirational... 679ab5b0e2 It has been known for many years that ejection of matter at relativistic velocities (velocities very close to the speed of light) is a necessary requirement for producing the emission in a gamma-ray burst. GRBs vary on such short timescales (as short as milliseconds) that the size of the emitting region must be very small, or else the time delay due to the finite speed of light would "smear" the emission out in time, wiping out any short-timescale behavior. At the energies involved in a typical GRB, so much energy crammed into such a small space would make the system opaque to photon-photon pair production, making the burst far less luminous and also giving it a very different spectrum from what is observed. However, if the emitting system is moving towards Earth at relativistic velocities... 679ab5b0e2 == Gamma ray characteristics == 679ab5b0e2 A detailed analysis of this spectrum is typically used to determine the identity and quantity of gamma emitters present in a gamma source, and is a vital tool in radiometric assay. The gamma spectrum is characteristic of the gamma-emitting nuclides contained in the source, just like in an optical

spectrometer, the optical spectrum is characteristic of the material contained in a sample. Beta particles with an energy of 0.5 MeV have a range of about one metre in the air, and can't pass through clothing or thin metal sheets; the distance is dependent on the particle's energy and the air's density and composition.

Hemolysis (microbiology) species. The ability of bacterial colonies to induce hemolysis when grown on blood agar is used to classify certain microorganisms. A substance that causes hemolysis is called a hemolysin. When alpha-hemolysis (α -hemolysis) is present, the agar under the colony is light and Hemolysis is the breakdown of red blood cells. This is particularly useful in classifying streptococcal species. A substance that causes hemolysis is called a hemolysin

Radionuclides are chosen according to the type and character of the radiation they emit, intensity of emission, and the half-life of their decay. Common source radionuclides include cobalt-60, iridium-192, and strontium-90. The SI measurement quantity of... == Beta decay modes == Gamma rays from radioactive decay are in the energy range from ten kiloelectronvolts (keV) to 10 megaelectronvolts (MeV), corresponding to the typical energy levels in nuclei with reasonably long lifetimes. The energy spectrum of gamma rays can be used to identify the decaying radionuclides using gamma...

Gamma-ray burst emission mechanisms α $-\beta$ $E^{\beta} \exp(-\beta \alpha)$ E E_0 A few gamma-ray bursts Gamma-ray burst emission mechanisms are theories that explain how the energy from a gamma-ray burst progenitor (regardless of the actual nature of the progenitor) is turned into radiation. Neither the light curves nor the early-time spectra of GRBs show resemblance to the radiation emitted by any familiar physical process. These mechanisms are a major topic of research as of 2007

== Types ==

https://ftp.spruitsportcoaching.nl/@u/journal/url?TEXT=a_arte-da_guerra_pdf
https://ftp.spruitsportcoaching.nl/-p/text/find?RTF=positive-phrases-to-describe-a_person
https://ftp.spruitsportcoaching.nl!/y/text/exe?PAGE=are_gherkins_good_for-you
https://ftp.spruitsportcoaching.nl/-d/play/data?TXT=what-is_hydrogenation_what-is_its_industrial-application

https://ftp.spruitsportcoaching.nl/@n/ref/list?PUB=cosas_con-la-letra_d
[https://ftp.spruitsportcoaching.nl/\\$m/edu/url?EBOOK=yoga_for_knee_pain](https://ftp.spruitsportcoaching.nl/$m/edu/url?EBOOK=yoga_for_knee_pain)
https://ftp.spruitsportcoaching.nl/_q/lib/dl?PLAY=can-hard-water_cause_hair-loss
https://ftp.spruitsportcoaching.nl/!y/ref/search?BOOK=difference_between_formal_and-informal_sources_of_credit
[https://ftp.spruitsportcoaching.nl/\\$z/play/list?PPT=photo_of_galaxy-milky_way](https://ftp.spruitsportcoaching.nl/$z/play/list?PPT=photo_of_galaxy-milky_way)
https://ftp.spruitsportcoaching.nl/~y/text/goto?PPT=daiichi_sankyo-co-ltd
https://ftp.spruitsportcoaching.nl/=a/edu/upload?BOOK=wood_frog-rana_sylvatica