

Definition: **meson** from *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

In physics, a group of unstable subatomic particles made up of a quark and an antiquark. They are found in cosmic radiation, and are emitted by nuclei under bombardment by very high-energy particles.

The mesons form a subclass of the hadrons and include the kaons and pions. Their existence was predicted in 1935 by Japanese physicist Hideki Yukawa.

Summary Article: **meson**

From *The Columbia Encyclopedia*

(mē'zŏn) [Gr.,=middle (i.e., middleweight)], class of elementary particles whose masses are generally between those of the lepton class of lighter particles and those of the baryon class of heavier particles. From a technical point of view mesons are strongly interacting bosons; i.e., they participate in the strong nuclear force and are described by the Bose-Einstein statistics, which apply to all particles not covered by the Pauli exclusion principle. The lightest meson is the pion, whose mass is about 270 times that of the electron. Heavier mesons include the kaon (K meson), eta meson, and a number of higher-mass recurrences of the lighter mesons. The heaviest mesons are heavier than some baryons, such as the proton and neutron, but their classification as mesons is based on their behavior rather than on their mass. The existence of mesons was first predicted in 1935 by Hideki Yukawa, who theorized that they could be responsible for the force holding the nucleus of an atom together. In 1936 a particle was discovered by Carl D. Anderson and Seth Neddermeyer that had a mass close to that predicted for the Yukawa particle. However, the behavior of this particle, the muon, did not correspond to that of the theory at all. The muon was subsequently reclassified as a lepton rather than a meson. The particle predicted by Yukawa was the pion, which was not discovered until 1947 by C. F. Powell and coworkers. Both the muon and the pion were first observed in secondary cosmic rays, being produced in the upper atmosphere by collisions between primary cosmic rays and the atoms of the atmosphere. Since then mesons have been produced and observed in large numbers in laboratories where high-energy particle collisions can be achieved with the aid of a particle accelerator. It is now known that each type of meson consists of a quark bound to an antiquark.

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Meson. (2018). In P. Lagasse, & Columbia University, *The Columbia encyclopedia* (8th ed.). New York, NY: Columbia University Press. Retrieved from <https://search.credoreference.com/content/topic/meson>





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