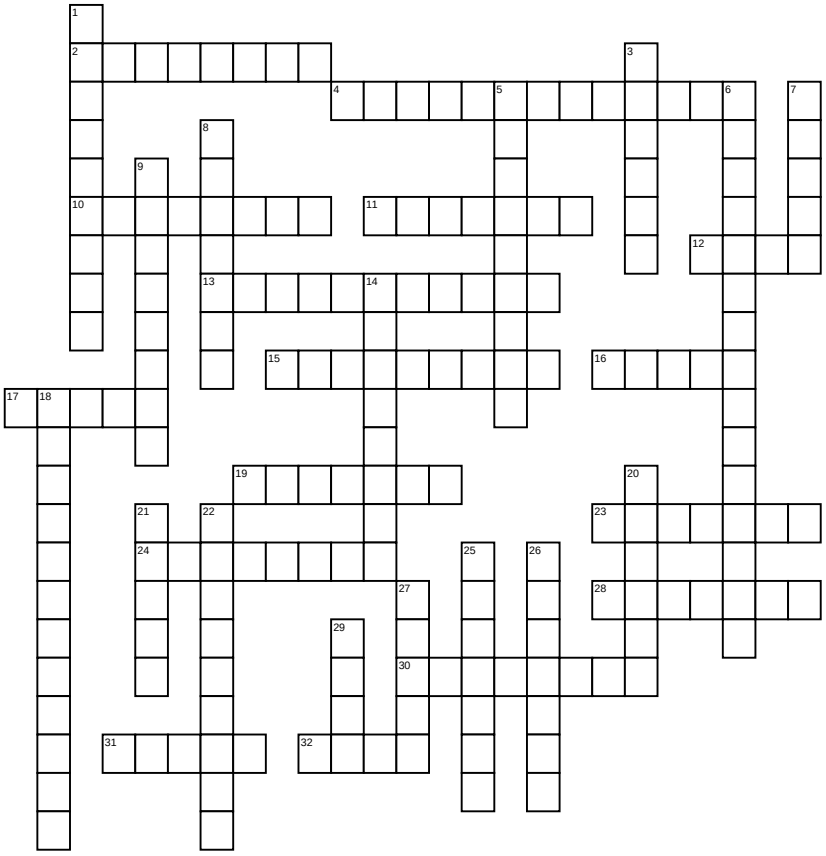

ACROSS

2 Proton _____, also known as proton radioactivity, is a type of radioactive decay in which a proton is ejected from a nucleus.

4 Nuclear _____ is the conversion of one chemical element or isotope into another, which occurs through nuclear reactions.

10 _____ uranium is a sample of uranium in which the percent composition of uranium-235 has been increased through the process of isotope separation.

11 _____ physics is the branch of physics concerned with the nucleus of the atom.

12 In nuclear physics, _____ decay is a type of radioactive decay in which an electron or a positron is emitted.

13 A quantity is said to be subject to _____ decay if it decreases at a rate proportional to its value.

15 _____ in nuclear physics describes energy in the form of waves or moving subatomic particles.

16 _____ water is water which contains a higher proportion than normal of the isotope deuterium as deuterium oxideor as deuterium protium oxide.

17 _____ rays are forms of electromagnetic radiation of a specific frequency produced from sub-atomic particle interaction, such as electron-positron annihilation and radioactive decay.

19 _____ is a radioactive isotope of hydrogen with a nucleus containing one proton and two neutrons.

23 The _____ force or residual strong force is the force between two or more nucleons. It is responsible for binding of protons and neutrons into atomic nuclei.

24 _____ capture, sometimes called inverse beta decay, is a decay mode for isotopes that will occur when there are too many protons in the nucleus of an atom and insufficient energy to emit a positron.

28 In nuclear engineering, a _____ material is one that is capable of sustaining a chain reaction of nuclear fission.

30 _____ emission is a type of beta decay, sometimes referred to as beta plus decay.

31 The _____ is a unit of radioactivity which is roughly the activity of 1 gram of the radium isotope 226Ra.

32 _____ particles are high-energy, high-speed electrons or positrons emitted by certain types of radioactive nuclei.

DOWN

1 The _____ is the SI derived unit of radioactivity equal to one nucleus decay per second.

3 The _____ interaction is today understood to represent the interactions between quarks and gluons as detailed by the theory of quantum chromodynamics.

5 In nuclear engineering, a neutron _____ is a medium which reduces the velocity of fast neutrons, thereby turning them into thermal neutrons capable of sustaining a nuclear chain reaction.

6 _____ is the process of creating new atomic nuclei from preexisting nucleons.

7 _____ particles consist of two protons and two neutrons bound together into a particle identical to a helium nucleus.

8 A _____ is a collective name for two baryons: the neutron and the proton.

9 A _____ mass is the smallest amount of fissile material needed for a sustained nuclear chain reaction.

14 Neutron _____ is a type of radioactive decay in which an atom contains excess neutrons and a neutron is simply ejected from the nucleus.

18 _____s, the antiparticles of neutrinos, are neutral particles produced in nuclear beta decay.

20 Nuclear _____ is the process by which multiple atomic particles join together to form a heavier nucleus.

21 Radioactive _____ is the process in which an unstable atomic nucleus loses energy by emitting radiation in the form of particles or electromagnetic waves.

22 _____, also called heavy hydrogen, is a stable isotope of hydrogen with a natural abundance in the oceans of Earth of approximately one atom in 6500 of hydrogen.

25 Nuclear _____ is the splitting of the nucleus of an atom into lighter nuclei often producing photons in the form of gamma rays, free neutrons and other subatomic particles as by-products.

26 A _____ rod is a rod made of chemical elements capable of absorbing many neutrons without fissioning themselves. They are used in nuclear reactors to affect the rate of fission.

27 _____ decay is a type of radioactive decay in which an atomic nucleus emits two protons and two neutrons bound together into a particle identical to a helium nucleus.

29 The half-_____ of a quantity, subject to exponential decay, is the time required for the quantity to decay to half of its initial value.