

What's a Neutrino?

From the cosmic dance of the galaxies to the pulsing core of an atomic nucleus, four forces rule. Gravity and electromagnetism push and pull at every object: apples fall, magnets stick to refrigerators. Deep within each atom's core, the strong force holds the nuclear components together, and the weak force may make send them flying apart. The electromagnetic force is also important in the micro-world, because we can only detect particles when their electric charge betrays them, leaving lingering traces in our trackers.

We call particles that feel the weak force leptons (from the Greek for thin or light). Commonest are the electrons, negatively charged particles zooming around the atom's nucleus. Neutrinos are also leptons, but as their name "little neutrals" implies, they have no electric charge to give their passage away. Only by banging into other particles do they reveal their presence.

Still, neutrinos matter! They start the thermonuclear fusion engines that fire the Sun, they carry information to us from distant supernovae, they can tell us a lot about the universe and how it works.

