

A IS FOR ATOM

Atoms are an obvious first subject for a show about science, because they are the building blocks of everything else. I am therefore very lucky that the word 'Atom' starts with an 'A'. And if the first building block of the Universe is the atom, then the first building block of music is the human voice. And I am also very lucky that music that uses nothing except the human voice is called 'a capella', which also starts with an 'A'. Not all my choices for songs in this show make quite as much poetic sense as that, but it's wonderful when two things come together so perfectly.

For some of the songs, I will explain the scientific words in boxes that look a bit like (actually a lot like) this: (note that the words don't appear in alphabetical order; they're in the order they appear in the song)

ATOM: One of the smallest things that there is, consisting of an atomic nucleus and its surrounding electrons.

ELECTRON: a subatomic particle (which means 'a thing even smaller than an atom') with a negative electric charge, which whizzes round the nucleus in an electron cloud.

FEMTOMETRE: a very very small measure of distance. To be exact, one femtometre is 0.000,000,000,000,0001 metres long.

NUCLEUS: the centre of the atom, which is much much tinier than the atom, but contains almost all of its mass.

HADRON: the things which make up the nucleus. There are two types of hadron - protons and neutrons.

PROTON: a positively-charged subatomic particle, made of two up-quarks and one down-quark.

NEUTRON: a subatomic particle with no electrical charge, made of two down-quarks and one up-quark.

GLUON: a subatomic particle that 'glues' together quarks to make hadrons. They don't actually use glue to do this, they use something called the 'strong force'.

QUARK (pronounced to rhyme with 'spark'): a really strange subatomic particle that can't normally be taken out of a hadron. They are so small that we know very little about them. We know that there are six different sorts - which we call Up, Down, Charm, Strange, Top and Bottom - of which Up and Down are the most common.

