

# DISCOVERING PARTICLES PUZZLE BREAK



## PARTICLE-PHYSICS WORD SEARCH

See how many words or names you can find from each of the groups below.

Words may be written forwards or backwards, and may be horizontal, vertical or diagonal.

FUNDAMENTAL PARTICLES  
**boson gluon graviton**  
**lepton photon quark**

COMPOSITE PARTICLES  
**baryon hadron meson**

THEORETICAL  
 (UNDISCOVERED) PARTICLES  
**Higgs neutralino**  
**slepton squark**

TECHNOLOGY  
**computer collider**  
**detector grid**

EXPERIMENTS AT THE LARGE  
 HADRON COLLIDER:  
**ALICE ATLAS CMS**  
**LHCb TOTEM**

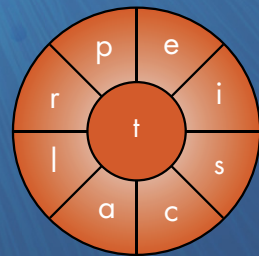
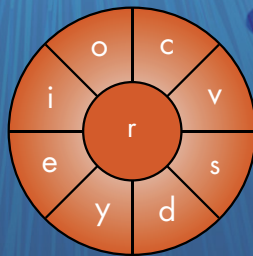
RESEARCHERS AWARDED  
 A NOBEL PRIZE FOR WORK IN  
 PARTICLE PHYSICS  
**Chapman Cronin**  
**Feynman Steinberger**  
**Wilson**



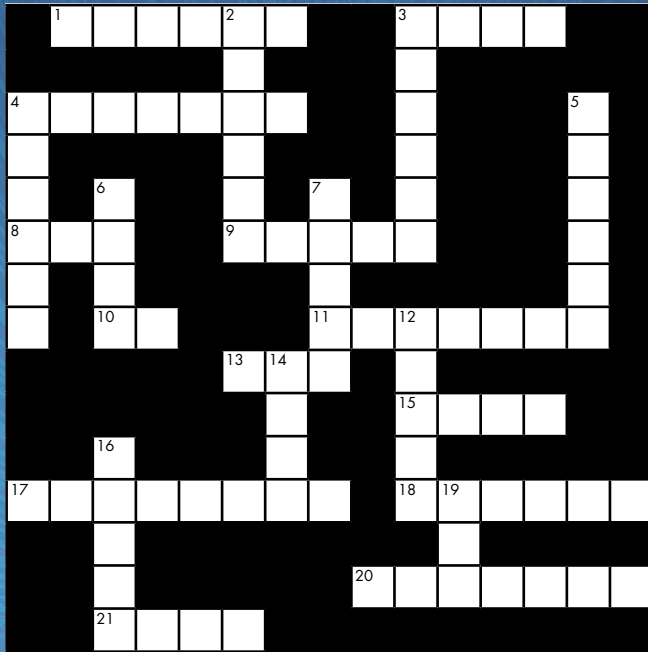
## HIGH-ENERGY WORD WHEELS

See how many different words you can make with the letters in these word wheels.

Work with one word wheel at a time, using each letter only once and always including the centre letter. Can you find the two nine-letter words?



# LARGE HADRON CROSSWORD



## ACROSS

- 1 The E in Einstein's equation  $E = mc^2$  (6)
- 3 The world's largest particle-physics laboratory, straddling the Swiss-French border (4)
- 4 The hadrons usually collided at the Large Hadron Collider (7)
- 8 The heaviest type of quark (3)
- 9 The experiment focusing on heavy-ion collisions at the Large Hadron Collider (5)
- 10 Will interactions at the Large Hadron Collider destroy the Earth? (2)
- 11 The only fundamental force not included in the Standard Model of Particle Physics (7)
- 13 The more compact of the two general-purpose experiments at the Large Hadron Collider (3)
- 15 The type of heavy ions usually collided at the Large Hadron Collider (4)
- 17 An almost massless particle, which interacts through the weak force and is produced in radioactive beta decay (8)
- 18 The force that binds the constituents of the atomic nucleus (6)
- 20 The electrically neutral particle inside the atomic nucleus (7)
- 21 A meson that contains a strange quark (4)

## DOWN

- 2 The Swiss city close to the Large Hadron Collider (6)
- 3 An electrical quantity that has opposite sign for particle and antiparticle (6)
- 4 A quantum of light (6)
- 5 The type of quark of special interest in the LHCb experiment, and a synonym of attractiveness (6)
- 6 Intrinsic angular momentum, the quantity that distinguishes bosons and fermions (4)
- 7 The undiscovered boson linked with the origin of mass (5)
- 12 The larger of the two general-purpose experiments at the Large Hadron Collider, and the Titan who supported the heavens in Greek mythology (5)
- 14 The second-generation charged lepton (4)
- 16 The type of fundamental particle confined in hadrons (5)
- 19 The heaviest lepton (3)