

QUANTUM PHYSICS WITH FABIO COSTA

TALKING POINTS

1. How would you describe a causal relation? (See *Introduction to article*).
2. What is Albert Einstein's theory of gravity? (See *Who came up with the concept of quantum physics potentially changing our notions of cause and effect?*)
3. What do the laws of classical physics demand? (See *How has Fabio and his team shown that a single event can be both a cause and an effect?*)
4. Fabio uses analogies of a coin and two buses to describe quantum superposition. Can you come up with another analogy to describe this? (See *Understanding quantum superposition: How a single event can be both a cause and an effect*)
5. One of the main stumbling blocks to our understanding of quantum physics is that it is counterintuitive. Can you give an example of where it is counterintuitive? (See *ABOUT QUANTUM PHYSICS*)
6. Why did Einstein believe that quantum physics was flawed? (See *Introduction to ABOUT QUANTUM PHYSICS*)
7. What is one of the main advantages of new quantum technologies? (See *How has quantum physics evolved over the years?*)
8. What could quantum technologies lead to in the future? Let your imagination run away with you! (See *How has quantum physics evolved over the years?*)

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

1. Take a look at this Youtube video from Physics Girl: *What is a quantum coin toss*, which describes how quantum coin flipping is the fairest way to flip a coin if you are on the phone:

<https://www.youtube.com/watch?v=UjFkly1GTIk>



2. Podcasts can be a brilliant way of learning about new concepts and developing existing knowledge. *Physics Today* has named six specific podcasts for science lovers: <https://tinyurl.com/tpwblo8>



3. The Institute of Physics has dedicated an area of their site to helping students understand more about quantum physics. Have a look at their lessons and see if it is something you want to pursue: <http://tap.iop.org/atoms/quantum/index.html>

