



Trapped Ion Qubits



One type of qubit is made from charged atoms, called **ions**. Ions are created when you add or take away electrons from an atom, changing whether it is negatively or positively charged. One common example of an ion that you may know about is the electrolytes in sports drinks! These charged particles make convenient qubits because they easily interact with each other through electric forces. The downside to using ions, however, is that they are easily influenced by the surrounding electrical environment. Scientists must work hard to isolate these ions from their surroundings and carefully move them close to each other. Then, the qubits, which are made up of qualities of the ion, like energy or spin, can communicate. This was first done with large three-dimensional electromagnetic “traps”, but new advancements have allowed scientists to make precise electronic structures to trap ions on a two-dimensional surface.