

## **Exotic forms of matter: Multiquark systems**

Georg Wolschin  
Institute for Theoretical Physics  
Heidelberg University  
Germany

It is well-known that protons and neutrons that make up atomic nuclei consist of three elementary quarks, whereas mesons such as pions contain a quark and an anti-quark, bound by gluons. However, the existence of short-lived exotic systems made up of four or five quarks is theoretically viable, as was predicted by Zweig and Gell-Mann already in 1964. The experimental search for such multiquark systems remained largely elusive for many years, until the Japanese Belle collaboration at KEK found first indications for a tetraquark in 2002, which was later confirmed by the European LHCb collaboration at the Large Hadron Collider LHC in Geneva – before they reliably detected the first pentaquark resonances in 2013. This talk summarizes the current status of the field for a public audience.