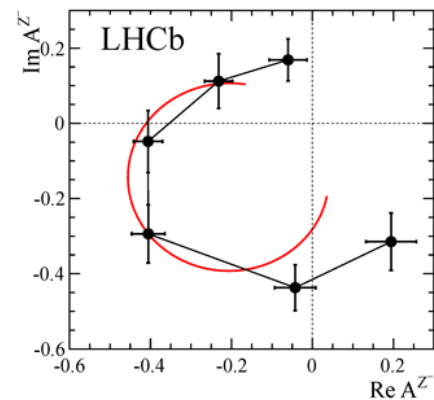
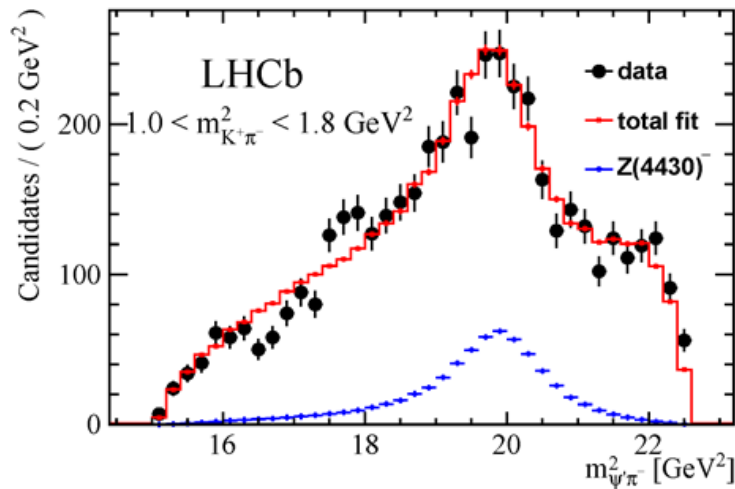


The LHCb Collaboration has reported on April 9, 2014 an analysis of about 25 200 $B^0 \rightarrow \psi' K\pi^-$, $\psi' \rightarrow \mu^+\mu^-$ decays observed at $\sqrt{s} = 7$ and 8 TeV. The significance of the $Z(4430)^-$ signal in LHCb data sample is overwhelming, at least 13.9σ , confirming the existence of this state.

The minimal quark content of the $Z(4430)$ state is $c\bar{c}d\bar{u}$. It is therefore a four quark state or a two-quark plus two-antiquark state.

The LHCb analysis establishes the, so called, resonant nature of the observed structure in the data, and in this way proving unambiguously that the $Z(4430)$ is



really a particle.

The black points at the left image above show the $\psi' \pi^-$ invariant mass squared distribution of the data. The blue histogram shows the $Z(4430)$ contribution. The right image shows the so called Argand diagram proving to the experts that the $Z(4430)$ structure seen in the data (black points) represents really the resonant particle production and decay, since it follows approximately a circular path (red circle).

sources - <http://lhcb-public.web.cern.ch/lhcb-public/>
 - <http://arxiv.org/pdf/1404.1903v1.pdf>