Pentaquarks and Tetraquarks at LHCb

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I will discuss the discovery of two pentaquark states both decaying into a J/ψ meson and a proton. The decay mode defines the quark content as c cbar, u, u, d, and thus are called charmonium pentaquarks. These exotic structures are found in Λb→J/ψ K- p decays whose existence and properties are determined from a full amplitude analysis using 7 and 8 TeV pp collision data corresponding to an integrated luminosity of 3/fb collected by the LHCb experiment. The two states will be shown to be of opposite parity and have spins 3/2 and 5/2. I will also present a determination of spin parity of the the Z(4430) tetraquark meson, also a charmonium state. Finally different models of pentaquark structure will be discussed.