Experimental investigation of atoms consisting of $\pi^+\pi^-$, $K^+\pi^-$and $K^-\pi^+$.

A. Benelli on behalf of the DIRAC collaboration

JINR - Zurich University

The DIRAC experiment at the PS accelerator at CERN will be presented. The main purpose of the experiment is to check the precise predictions of low-energy QCD measuring the characteristics of the atoms formed by $\pi^+\pi^-$, $K^+\pi^-$and $K^-\pi^+$.

We present the preliminary results of the search for $K\pi$ atoms together with the published results of the scattering length $|a_0 - a_2|$ obtained from the analysis of the $\pi\pi$ atoms.

The observation of long lived $\pi\pi$ atoms allows to measure the Lamb shift $\Delta E_{(2s-2p)}$ and the $2a_0 + a_2$ combination of scattering lenghts. The description of DIRAC experiment to search for long lived atoms, started in 2011, will be presented.

E-mail: Angela.Benelli@cern.ch