

## **$Y^*$ resonances investigation originated in K-light nuclei absorption by AMADEUS**

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The AMADEUS experiment deals with the investigation of the low-energy kaon-nuclei hadronic interaction at the DAΦNE collider at LNF-INFN, which is fundamental to solve long-standing questions in the non-perturbative strangeness QCD sector. AMADEUS step 0 consisted in the re-analysis of 2004/2005 KLOE data, exploiting  $K^-$  absorptions in  $H$ ,  $^4He$ ,  $^9Be$  and  $^{12}C$ , leading to the first invariant mass spectroscopy study with in-flight negative kaons. With AMADEUS step 1 a dedicated pure Carbon target was implemented in the central region of the KLOE detector, providing a high statistic sample of pure at-rest  $K^-$  nuclear interaction.

We will show the results obtained in the analysis of the  $\Sigma^+\pi^-$  and  $\Sigma^0\pi^0$  (pure isospin 0) channels, intended to shed light on the controversial nature of the  $\Lambda(1405)$  state. The analysis of the  $\Lambda(\Sigma^0)\pi^-$  channel, from which the measurement of the module of the isospin 1, S-wave non resonant transition amplitude can be extracted for the first time, will be presented.

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