Near Threshold K^+K^- Meson-Pair Production in Proton-Proton Collisions

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Abstract

The near threshold production of K^+K^- meson pairs via the reaction $p + p \to p + p + K^+ + K^-$ has been studied using the COSY-11 facility at the cooler synchrotron COSY (Jlich). The obtained total cross section at an excess energy of Q = 17 MeV as well as an upper limit at an excess energy of Q = 3 MeV represent the first measurements on the K^+K^- production in the region of small excess energies where production via the channel $p + p \to p + p + \Phi \to p + p + K^+ + K^-$ is energetically forbidden. The obtained results reveal an elementary and thus at the given excess energy inclusive K^- cross section which is exceeded by the corresponding inclusive K^+ cross section by approximately two orders of magnitude. The experimental technique applied at the internal COSY-11 facility as well as final results on the K^+K^- meson-pair will be presented.