Kaon pair production in proton-proton collisions at COSY

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The near-threshold production of kaon-pairs has been investigated in proton-proton collisions at Cooler Synchrotron (COSY). Total cross sections for ϕ-meson production have been determined at excess energies ε of 18.5, 34.5, and 76 MeV. The differential spectra at an excess energy of 18.5 MeV exhibit a clear s-wave dominance, while the data at an excess energy of 76 MeV shows that higher partial waves represent the majority of the $pp \to pp\phi$ total cross section, whose energy dependence would then seem to require some s-wave ϕp enhancement near threshold. In addition, the energy dependence of total cross sections of the non-ϕ kaon-pairs production and the invariant mass distributions of K^-p, K^-pp, and K^+K^- indicate the presence of both K^-p and K^+K^- final state interactions.

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