

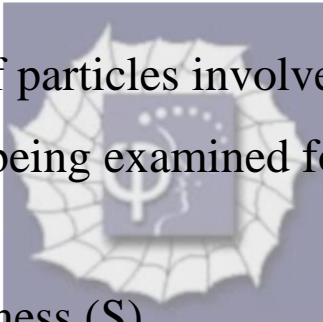
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Problem 56.13 (RHK)

By examining the strangeness, we have to determine which one of the following decays or reactions proceed via the strong interaction. (a) $K^0 \rightarrow \pi^+ + \pi^-$; (b) $\lambda^0 + p \rightarrow \Sigma^+ + n$; (c) $\lambda^0 \rightarrow p + \pi^-$; (d) $K^- + p \rightarrow \lambda^0 + \pi^0$.

Solution:

The strangeness of particles involved in the decays and reactions that are being examined for its conservation are as follows:



particle	strangeness (S)
p	0
n	0
K^0	1
K^-	-1
λ^0	-1
Σ^+	-1

Strangeness is added algebraically. We note that in the above list of decays and reactions only in the reactions

$\lambda^0 + p \rightarrow \Sigma^+ + n$, and

$K^- + p \rightarrow \lambda^0 + \pi^0$ strangeness is conserved, which is an essential condition for an interaction to take place with strong force.

