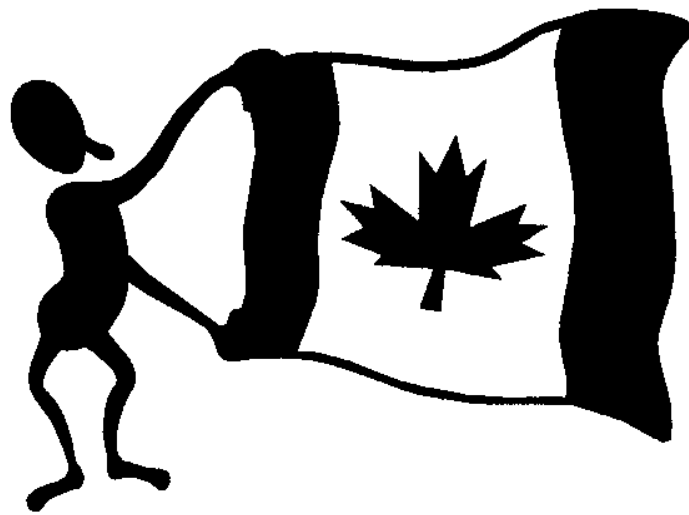




ISOSPIN VIOLATION IN SEMILEPTONIC DECAYS.

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$\Sigma\Lambda$ MIXING

- When isospin is not conserved:
$$\Lambda = \Lambda_8 \cos \varphi + \Sigma_8 \sin \varphi$$
$$\Sigma = -\Lambda_8 \sin \varphi + \Sigma_8 \cos \varphi$$
- $\sin \varphi = -(\sqrt{3}/4) * (m_d - m_u) / (m_s - m_{av}) = -0.015$
- Ref: Dalitz and von Hippel(1964) MacFarlane and Sudarshan(1964) Isgur(1980), Leutwyler et al(1982)
- review:
Donoghue, Ann.Rev.Nucl(1989)

EFFECTS OF MIXING ON SEMILEPTONIC DECAYS

$$R(\phi) = \Gamma(\Sigma(+) \Rightarrow \Lambda \bar{e} \nu) / \Gamma(\Sigma(-) \Rightarrow \Lambda e \bar{\nu})$$

$$= R(0) * (1 - 3.95\phi) = R(0) * (1 - 0.06)$$

$$= 0.65$$

a six percent diminution relative to no mixing.
Present data is not good enough to check this
value.(**Exp:R=.645+/-0.18**)

Ref:Karl,Phys.Lett.B328,149(1994)

Henley&Miller,Phys.RevD50,7077(1994)

g_V/g_A for

$\Sigma \Rightarrow \Lambda e \nu$

FOR ZERO MIXING

$\phi = 0$

g_V VANISHES

(Cabibbo and Gatto)

FOR GENERAL ϕ

$g_V/g_A = (\sqrt{3}/D)\phi$

$= -0.03 (\Sigma(-))$

Karl(1994)☺

disagrees with expt!