

is where the dynamics will come in, and the result will depend in general on the choice.

The essential points are as follows. We first take the meson matrices  $\mathcal{M}(\phi(x))$  and  $\mathcal{M}^+(\phi(x))$  which behave as  $(3_R, 3_L^*)$  and  $(3_L, 3_R^*)$ . We also have definite expressions for the vector and axial currents  $v_\mu^i$  and  $a_\mu^i$ . These will be expanded and expressed in terms of  $\phi^i$  and  $\partial_\mu \phi^i$ . In discussing the leptonic decays of mesons, we replace the basic hadronic current  $j_\mu$  in  $H_W$  by the above meson current. If we regard this as an effective Hamiltonian, we get automatically all possible processes like  $K \rightarrow \mu\nu$ ,  $K \rightarrow \mu\nu + \pi$ ,  $K \rightarrow \mu\nu + 2\pi$ . In the case of non-leptonic meson decays, one way may be to form a product of meson currents (probably with a phenomenological coupling constant rather than  $G_0$ ).

Another way is to introduce a spurion matrix  $S \sim \lambda_6$ , which should belong to  $(8_L, 1_R)$  according to the basic current-current Hamiltonian. We then form an invariant with respect to  $SU(3)_L \times SU(3)_R$  out of  $S$ ,  $\mathcal{M}$  and  $\mathcal{M}^+$ . A simplest non-trivial form is

$$H_{\text{eff}} = \text{Tr}(\partial_\mu \mathcal{M} S \partial_\mu \mathcal{M}^+)$$

The derivatives are necessary since otherwise  $\mathcal{M} \mathcal{M}^+ = 1$ . By expanding  $\mathcal{M}$  and  $\mathcal{M}^+$  we can reproduce the relations obtained earlier about  $K \rightarrow \pi$ ,  $2\pi$ ,  $3\pi$  decays. In particular, the energy and mass dependence of the amplitudes arises from the derivatives in the above formula.