

## 9.4: Elastic-inelastic

We shall often be interested in cases where we transfer both energy and momentum from one particle to another, i.e., we have inelastic collisions where particles change their character – e.g., their rest-mass. If we have, as in Figure 9.4.1, two particles with energy-momentum  $k_1$  and  $p_q$  coming in, and two with  $k_2$  and  $p_2$  coming out, We know that since energy and momenta are conserved, that  $k_1 + p_1 = k_2 + p_2$ , which can be rearranged to give

$$p_2 = p_1 + q, \quad k_2 = k_1 - q.$$

and shows energy and momentum getting transferred. This picture will occur quite often!

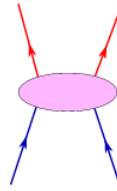


Figure 9.4.1: A sketch of a collision between two particles.

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