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!

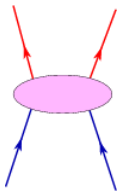

Figure 9.4.1*: A sketch of a collision between two particles.*