On the other hand, for small b, j_o in (7.8) is ≈ 1 so that Y_b is nearly independent of r_{23} (while for larger b, Y_b increases with r_{23}); therefore, for small b, the repulsive contribution from $r_{23} \lesssim c$ in (7.7) is not suppressed by the factor Y_b: This automatically eliminates the negative energy gap of Sprung et al., discussed as point 4 above. Points 1 and 2 are clearly satisfied by the new definition (7.7); point 5 of course remains.

The problem about the denominator y(b) is removed by remembering that the initial interaction may be alternatively tensor or central. Then it can easily be shown that a suitable definition is

$$U(b) = \frac{y_c^2(b)\, U_c(b) + y_T^2(b) U_T(b)}{y_c^2(b) + y_T^2(b)} \tag{7.9}$$

where $y_c(b)$ and $y_T(b)$ are the expressions (7.5), calculated respectively with the defect functions η_c and η_T for central and tensor forces, and U_c, U_T are defined correspondingly. The denominator of (7.9) does not vanish for any b, so that criticism 3 above is now also taken care of.

Multi-particle clusters

Rajaraman[13] has emphasized the usefulness of defining a U(b) in order to absorb the principal effect of many-body clusters. His argument runs briefly as follows: Consider all three-body ladders to be divided into the three groups as suggested in Sec.3: (i) those involving g_{short} only, (ii) those with v_ℓ only, and (iii) those mixed in g_s and v_ℓ. For class (i), we expect the