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Alpha clusterisation in Polonium 212

Describing nuclei with alpha particles had been very popular before these models were edged out by the shell model. But later some states in light isotopes like ^{16}O and ^{20}Ne have been described as “core + alpha” rotating systems, leading to a renewed interest in alpha clustering.

Recently this kind of structure has been also discovered in ^{212}Po via the high probability of dipolar transition of several nuclear states. But opposite to all the light nuclei, the deformation due to an alpha particle is negligible in the “ $^{208}\text{Pb} + \alpha$ ” system and so the motion of rotation is dramatically hindered. A totally new degree of freedom has been suggested to describe these states: a vibration of an alpha particle against a lead core.

I will present preliminary results on the transfer mechanism leading to the formation of these cluster states and describe the experiments planned or already done to keep studying these promising states.

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