

Study the structure of the low-lying states of ^{206}Po

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Abstract

In this study we present the results from an experiment dedicated to measure the lifetime of the 2_1^+ state of ^{206}Po . This nucleus was studied in the $2p$ -transfer reaction $^{204}\text{Pb}(^{16}\text{O}, ^{14}\text{C})^{206}\text{Po}$ and the lifetime of the 2_1^+ state was determined by utilizing the Recoil Distance Doppler Shift method. The experimental results were compared with shell-model calculations based on different effective interactions. The extracted $2_1^+ \rightarrow 0_1^+$ transition strength shows that the 2_1^+ state of ^{206}Po is of collective nature. In addition the lifetime of the 4_2^+ state was estimated and based on this estimation and the theoretical predictions we can conclude that there is clear indication for mixing of the first two 4^+ states of the nucleus ^{206}Po .