

Precision X-ray spectroscopy of hadronic atoms - pionic hydrogen challenges and results

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Precision X-ray spectroscopy of atomic transitions to the ground state of hadronic hydrogen can be used to extract the values of energy shift and broadening of the 1s ground state. Only the ground state is measurably influenced by the strong interaction meson-nucleon. A strongly refined experiment using a crystal spectrometer system was performed at PSI which resulted in improved shift and width values of pionic hydrogen. The data analysis was complicated due to the small shift and width values and especially challenging because of electromagnetic cascade effects. The talk will discuss the experiment, results and implications.

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