

Precision Spectroscopy at PANDA

Content

The versatile 4π -detector PANDA will be built at the Facility for Antiproton and Ion Research (FAIR), an accelerator complex, currently under construction near Darmstadt, Germany. A cooled antiproton beam in a momentum range of 1.5 – 15 GeV/c will be provided by the High Energy Storage Ring (HESR). PANDA will make use of the gluon-rich environment of the antiproton-proton interactions to address open questions in the field of hadron spectroscopy. Together with the intense and precisely tunable antiproton beam, PANDA will be able to perform unique and precise resonance energy scan measurements to determine the line shape of possibly very narrow resonances. Here, especially the identification and characterization of possibly exotic states are important goals of the PANDA hadron spectroscopy program.

This talk will summarize the ongoing activities for the preparation of precision spectroscopy measurements with PANDA, and especially focus on the example of the charmonium-like (exotic) $X(3872)$ state. Results of a feasibility study, that was carried out to quantify the achievable sensitivities for the natural width and line shape measurements of the $X(3872)$, and for a larger parameter space of input widths and luminosities, will be reported.

Summary

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