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Spectroscopy of pionic atoms via (p, 2He) reaction

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Spectroscopy of pionic atoms enables us to investigate partial restoration of chiral symmetry at finite density.It is theoretically known that the isovector potential parameter of parameter of the pion-nucleus interaction is related to the chiral condensate.Past experiments with the (d,3He) reaction at GSI showed an evidence of partial restoration of chiral symmetry. For the further study of pionic atoms, we are planning to perform a spectroscopy of pionic atoms via the (p, 2He) reaction at RCNP. In the experiment, a proton beam of 392 MeV impinges on a target and two protons are analyzed by the Grand Raiden spectrometer.Thanks to the high-resolution spectrometer and good beam properties, we will have a chance to achieve the highest resolution of 200 keV (FWHM). In this contribution, the overview of the experiment and preliminary results of feasibility studies will be discussed.

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