Physics > Instrumentation and Detectors

# Proposal for measuring the quantum states of neutrons in the gravitational field with a CCD-based pixel sensor

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An experimental setup is proposed for the precise measurement of the quantum states of ultracold neutrons bound in the earth's gravitational field. The experiment utilizes a CCD-based pixel sensor and magnification system to observe the fine structure of the neutron distribution. In this work, we analyzed the sensor's deposited energy measurement capability and found that its spatial resolution was 5.3 um. A magnifying power of two orders of magnitude was realized by using a cylindrical rod as a convex mirror.

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