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The single-neutron excitation of ^{207}Hg

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The single-neutron excitation was studied for the first time via the $^{206}\text{Hg}(\text{d},\text{p})$ reaction in inverse kinematics using a ^{206}Hg beam. The beam was produced at the CERN's ISOLDE facility at an energy of 7.4 MeV/u. The energy and position of protons emitted at backwards angles were measured using the new ISOLDE Solenoidal Spectrometer (ISS) at a magnetic field strength of 2.5 T. The energy resolution is ~ 140 keV. Angular distributions suggest that the $0g_{9/2}$, $2d_{5/2}$, $3s_{1/2}$, $2d_{3/2}$ and $0g_{7/2}$ orbitals were observed in ^{207}Hg . The result improves the understanding of the r-process and the synthesis of heavy nuclei.

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