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Observation of a Near-Threshold Proton Resonance in ^{11}B

At the John D. Fox Superconducting Linear Accelerator Laboratory a near-threshold proton resonance in ^{11}B at $E_{\text{ex}} = 11.44 \pm 0.04$ MeV is observed via the reaction $^{10}\text{Be}(d,n)^{11}\text{B} \rightarrow ^{10}\text{Be} + p$ in inverse kinematics, measured with a beam of the radioactive isotope ^{10}Be . The resonance energy at $E_{\text{c.m.}} = 211(40)$ keV is consistent with a proton signal observed by Ayyad et al. in the β -delayed proton decay of ^{11}Be . By comparison to a DWBA calculation, a $0.27(6)$ spectroscopic factor is extracted and a tentative ($\ell = 0$) character is assigned for this resonance. The significant cross section in the proton-transfer (d,n) reaction as well as the observation of its proton-decay signal point to a threshold-resonance character of this state, as recently suggested by Oko lowicz et al. .

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