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Structure of the neutron-rich isotope ^{13}B with $N = 8$ studied via lifetime measurements with low-energy fusion reactions HIRONORI IWASAKI, ALFRED DEWALD, CHRISTOPH FRANSEN, ADRIAN GELBERG, MATTHIAS HACKSTEIN, JAN JOLIE, THOMAS PISSULLA, WOLFRAM ROTHER, KARL-OSKAR ZELL, IKP, University of Cologne, Germany, PAVEL PETKOV, Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences, 1784 Sofia, Bulgaria — We report recent experimental studies on the structure of the neutron-rich isotope ^{13}B with $N = 8$ performed at the FN Tandem facility of the University of Cologne [1]. The lifetime measurements of the excited states in ^{13}B were performed by the Doppler-shift attenuation method with the ^{7}Li(^{7}Li,p)^{13}B reaction at a beam energy of 5.4 MeV. To select the reaction channel unambiguously, and hence reduce the background considerably, the particle-γ coincidence was employed. An anomalously long mean lifetime of 1.3(3) ps was found for the excited state at 3.53 MeV in ^{13}B. The hindered transition strengths between the ground and 3.53-MeV states clearly indicate significant intruder configurations for the excited state. The data are well explained by recent shell model calculations which suggest $J^{\pi} = 3/2^{-}$ for the 3.53-MeV state with the dominant intruder ($\nu 2p2h$) configuration, pointing to the fading effects of the $N = 8$ shell closure. The occurrence of the intruder configurations in the $N = 8$ isotones will be discussed.
[1] H. Iwasaki *et al.*, Phys. Rev. Lett. **102**, 202502 (2009).

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