Recent studies of exotic nuclei in Dubna and RIKEN

A. A. Korsheninnikov

RIKEN, Hirosawa 2-1, Wako, Saitama 351-0198, Japan

On leave from the Kurchatov Institute, Kurchatov sq. 1, 123182 Moscow, Russia.

Recently experiments were performed in Dubna (Russia) and RIKEN (Japan) to study ^{5}H, ^{7}H, and ^{8}He. The ^{5}H unstable state was searched for in two reactions, p(^{6}He,^{2}He)^{5}H [1] and t(t,p)^{5}H, using secondary beam of ^{6}He and primary beam of ^{3}H, respectively. To search for ^{7}H, the reaction p(^{8}He,^{2}He)^{7}H was investigated with the ^{8}He secondary beam. Also, cross sections were measured for the reaction p(^{8}He,t) populating ground state and excited 2^+-state in ^{6}He. In all these experiments cryogenic targets of hydrogen and tritium were used, which were produced in GANIL (France) and Sarov (Russia), respectively.

Results of these experiments show the ^{5}H state at $\sim$ 2 MeV above the t+2n threshold, manifest for ^{7}H an existence of some peculiarity near the t+4n threshold, and demonstrate that in the p(^{8}He,t) reaction the excited 2^+-state of ^{6}He is populated with higher cross section than the ^{6}He ground state, reflecting structure of the ^{8}He projectile.

[1] A.A. Korsheninnikov *et al.*, Phys. Rev. Lett. **87**, 092501 (2001).