^{17}Ne break-up in light targets including proton removal from the ^{15}O core.

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The reactions of the ^{17}Ne fragmentation in light (C,Be) target nuclei at energies from 20 to 700 MeV/nucleon are studied in the three-body (^{15}O+p+p) model. The interaction cross sections, the break-up cross sections, in particular, one- and two-proton removal cross sections, and the fragment momentum distributions are calculated in the eikonal approximation of the Glauber model with the three-body wave function of ^{17}Ne. In calculations, the contribution of the proton removal from the ^{15}O core fragment is taken into account. The results of the calculations are compared with available experimental data.

It is found, that the momentum distribution of the fragments in the one- and two-proton removal of the valence protons in ^{17}Ne is mainly determined by the s/d configuration mixing.

At the same time, it is found that the removal of the valence protons in ^{17}Ne constitutes only 60%-70% of the total proton removal cross section. The rest is possibly connected with the proton removal from the ^{15}O core.

Therefore, consideration of inclusive data on the core longitudinal momentum distribution is insufficient to draw conclusions about the halo property of ^{17}Ne as this characteristic possibly has large contribution from processes on the core. The question about configuration mixing in ^{17}Ne can be resolved by invariant mass measurement of ^{15}O and spectator proton after the proton knockout.