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## Extracting electric dipole breakup cross section of one-neutron halo nuclei from inclusive breakup observables

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How to extract an electric dipole (E1) breakup cross section  $\sigma(E1)$  from one-neutron removal cross sections measured at 250MeV/nucleon

by using  $^{12}\text{C}$  and  $^{208}\text{Pb}$  targets,  $\sigma_{-1n}^{\text{C}}$  and  $\sigma_{-1n}^{\text{Pb}}$ , respectively, is discussed.

It is shown that within about 5% error,  $\sigma(E1)$  can be obtained by subtracting  $\Gamma \sigma_{-1n}^{\text{C}}$  from  $\sigma_{-1n}^{\text{Pb}}$ , as assumed in preceding studies. However, for the reaction of weakly-bound projectiles, the scaling factor  $\Gamma$  is found to be about two times as large as that usually adopted. As a result, we obtain 13–20% smaller  $\sigma(E1)$  of  $^{31}\text{Ne}$  at 250MeV/nucleon than extracted in a previous analysis of experimental data. By compiling the values of  $\Gamma$  obtained for several projectiles,  $\Gamma = (2.30 \pm 0.41) \exp(-S_n) + (2.43 \pm 0.21)$  is obtained, where  $S_n$  is the neutron separation energy.

The target mass number dependence of the nuclear parts of the one-neutron removal cross section and the elastic breakup cross section is also investigated.

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