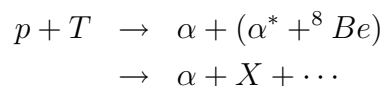


α substructures in light and heavy nuclei

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The inclusive $(p, \alpha x)$ reaction has attracted considerable interest in connection with pre-equilibrium theories of nuclear reactions. In paper [1] for the first time the excitation of internal degrees of bounded α -particles was observed. It was shown that the enhancements of $(p, \alpha x)$. Cross section in the range of 20 MeV of excitation energy are due to two step reactions



(T denotes target nuclei: ${}^{12}\text{C}$, ${}^{16}\text{O}$, ${}^{24}\text{Mg}$). In paper [2] the α substructures in heavy nuclei (rare-Earth nuclei) were investigated with the help of $(e^- \alpha \nu)$ reactions.

It was shown that the comparison of the values of the cross sections

$$\left(\frac{d^2\sigma}{d\Omega dF_\alpha} \right)_{e^- \alpha} \quad \text{for} \quad (e^-, \alpha \nu) \quad \text{reactions}$$

and

$$\left(\frac{d^2\sigma}{d\Omega dF_\alpha} \right)_{n, \alpha} \quad \text{for} \quad (n, \alpha) \quad \text{reactions}$$

allows the calculations of the mass of the intermediate boson W . From experimental data the value $m_w \sim 80m_p$ is obtained.

References

- [1] M. Kozłowski, *Lett. Nuovo Cimento*, **31**, (1981), p. 565.
- [2] M. Kozłowski, *Lett. Nuovo Cimento*, **27**, (1980), p. 17.