Charge changing cross section and proton disribution radii of Be isotopes

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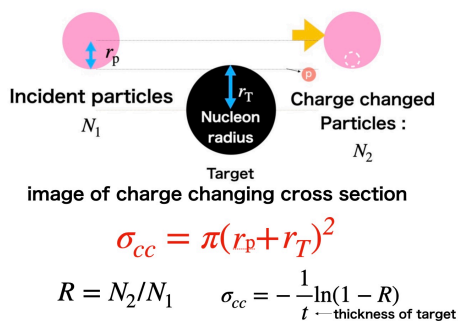
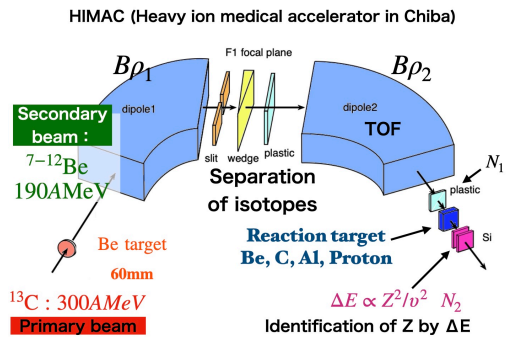
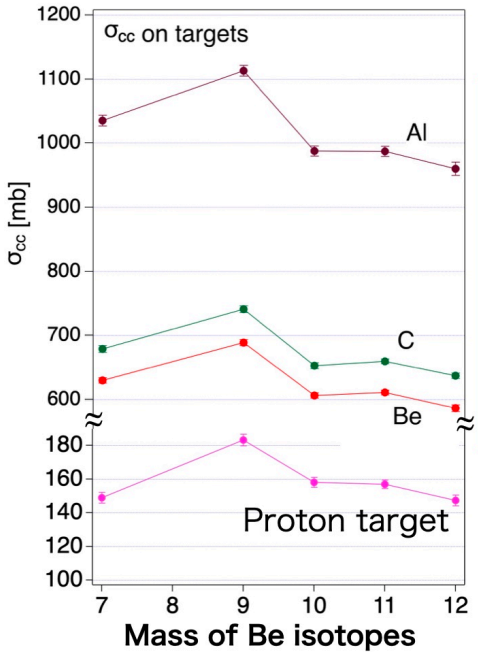
1. Measurement of charge changing cross section

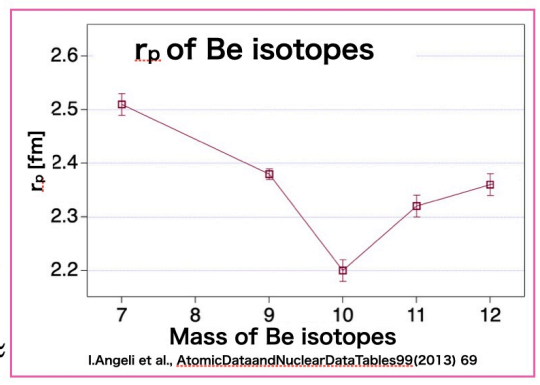


2. Experiment of charge changing cross section



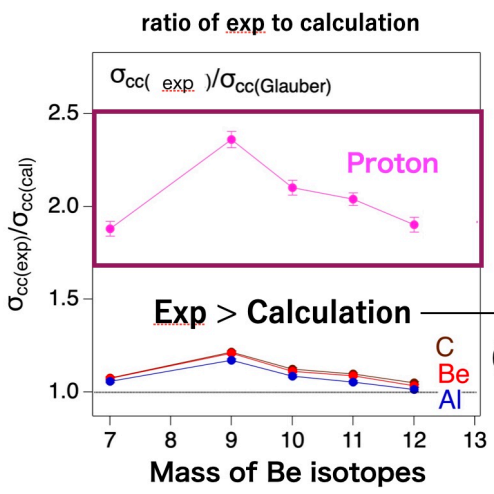
3. Results of charge changing cross section : σ_{cc}





σ_{cc} seems not to be related to r_p

4. Experimental data vs Glauber calculation

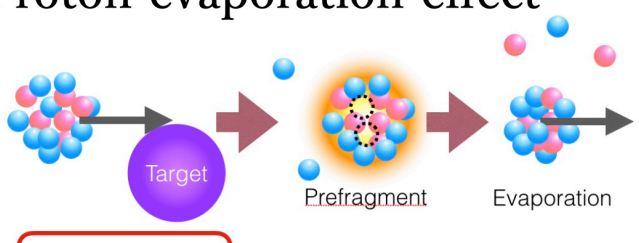


Glauber calculation misses to count some effect

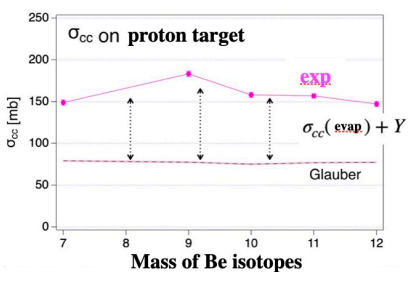
Particularly, it's remarkable in proton target !
→ possibility of extracting the effect

Glauber calculation
(Only known proton distributior radii taken into account)

5. Proton evaporation effect



Neutron abrasion → Excitation → evaporation of proton



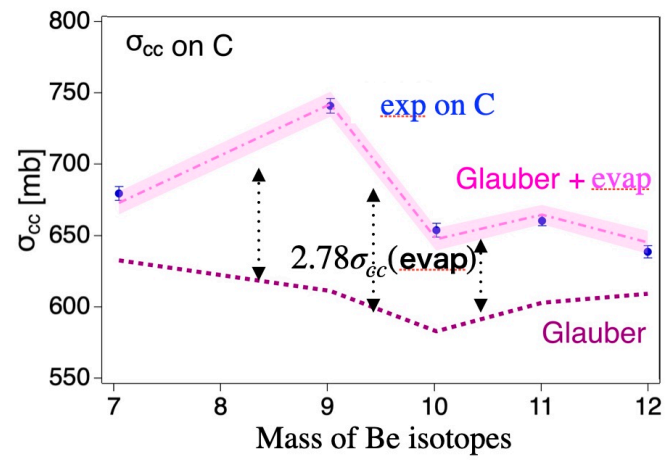
σ_{cc} to proton target

⇨ Extraction of proton evaporation cross section

$$\sigma_{cc}(\text{on p}) = \sigma_{cc}(\text{Glauber}) + \sigma_{cc}(\text{evap}) + Y$$

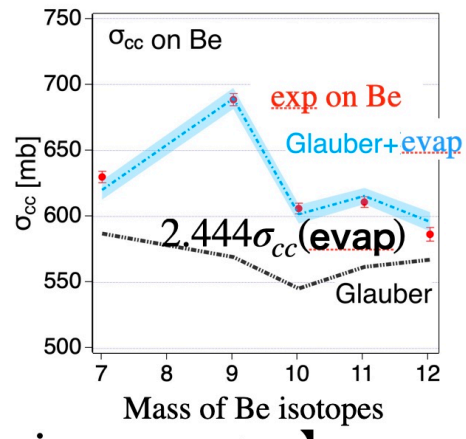
Y : Free parameter

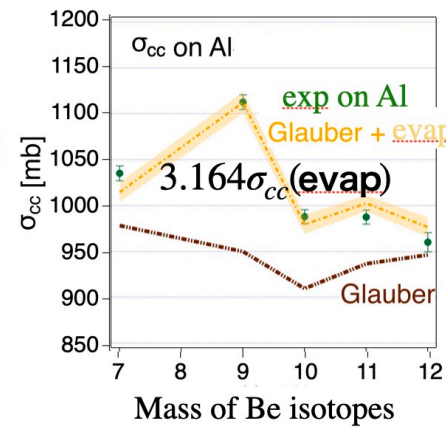
6. Reproduction of experimental σ_{cc} (with proton evaporation effect)



$$\sigma_{cc} = \sigma_{cc}(\text{Glauber}) + x\sigma_{cc}(\text{evap})$$

Y=57.74[mb]、x=2.78
⇨ Reproduction !!





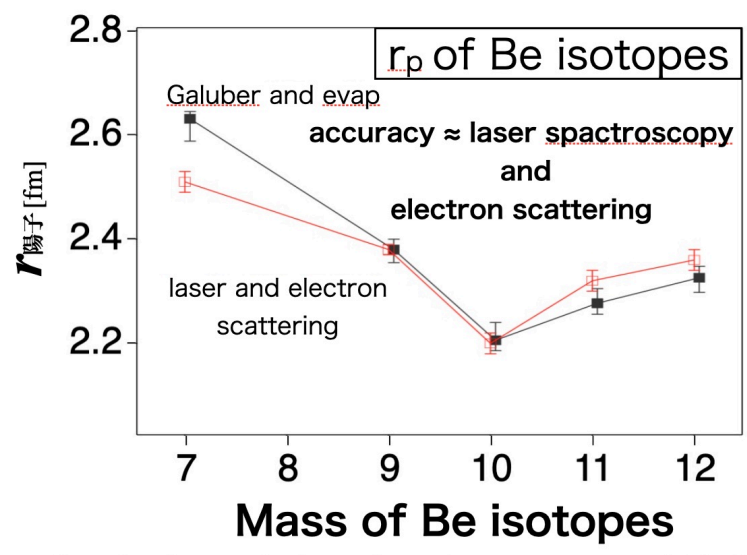
【using parameters】

parameter for reproducing experimental σ_{cc}

⇨ only Y(common for all targets), and x(each target)!
only 4 parameters

⇨ Reproducing 15 data ! !
(σ_{cc} for each isotope, and each target × 3)

7. Reproducing r_p



Result of reproducing r_p by using parameters which fits σ_{cc} for all experimental data.

Summary

- Measurement of σ_{cc} for $^{7-12}$Be
- σ_{cc} to proton → proton evaporation cross section
- → Reproducing σ_{cc}