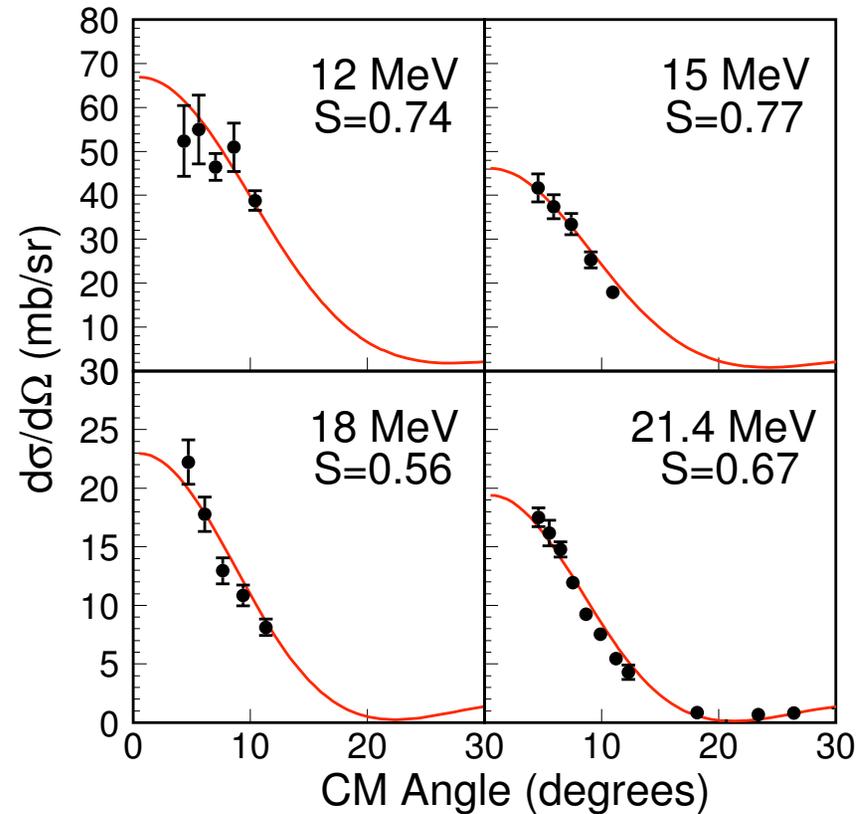


# The archetypal one-neutron halo nucleus $^{11}\text{Be}$ : controversy resolved.

- Long-standing controversy over the purity of states in  $^{11}\text{Be}$  resolved using measurements at different energies.
- Impressive statistics and resolution achieved using a “batch-mode” beam of the long-lived isotope  $^{10}\text{Be}$ .
- Transfer, elastic and inelastic scattering measured simultaneously to obtain a more complete picture of the reaction.
- Bound, halo states and low-lying resonances populated through a transfer reaction.
- “After ... Auton measured these important spectroscopic factors, his results stood for a long time. Then several groups ..., came along to muddy the water ... lots of nonsense (was) written about  $^{11}\text{Be}(\text{gs})$ . It is very good to see the return of sanity.” – reviewer *Physical Review Letters*



Angular distributions of protons emerging from the transfer reaction on a beam of  $^{10}\text{Be}$  reveal the nature of the ground state in  $^{11}\text{Be}$ . The spectroscopic factor (S) extracted here for measurements at four different energies is much more consistent than reported previously.

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