

Cosmic-Ray Lithium Production in the Nova Ejecta

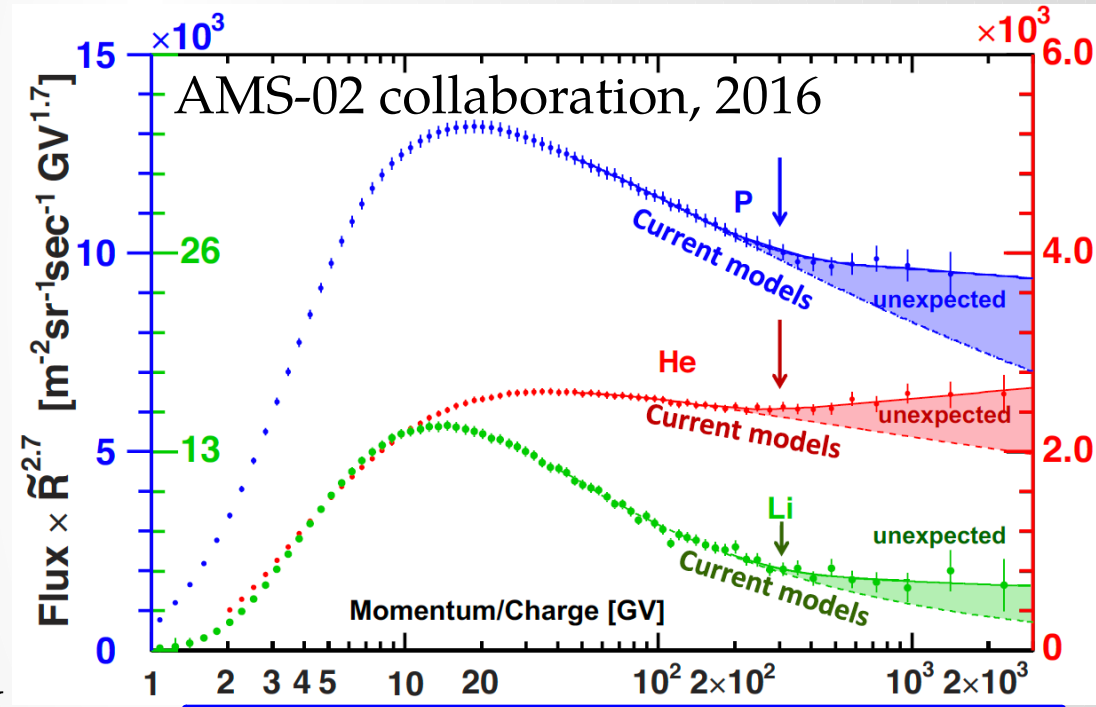
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direct measurement of cosmic-rays

✉ unexpected excesses in protons/He/Li

usually considered as secondary CRs

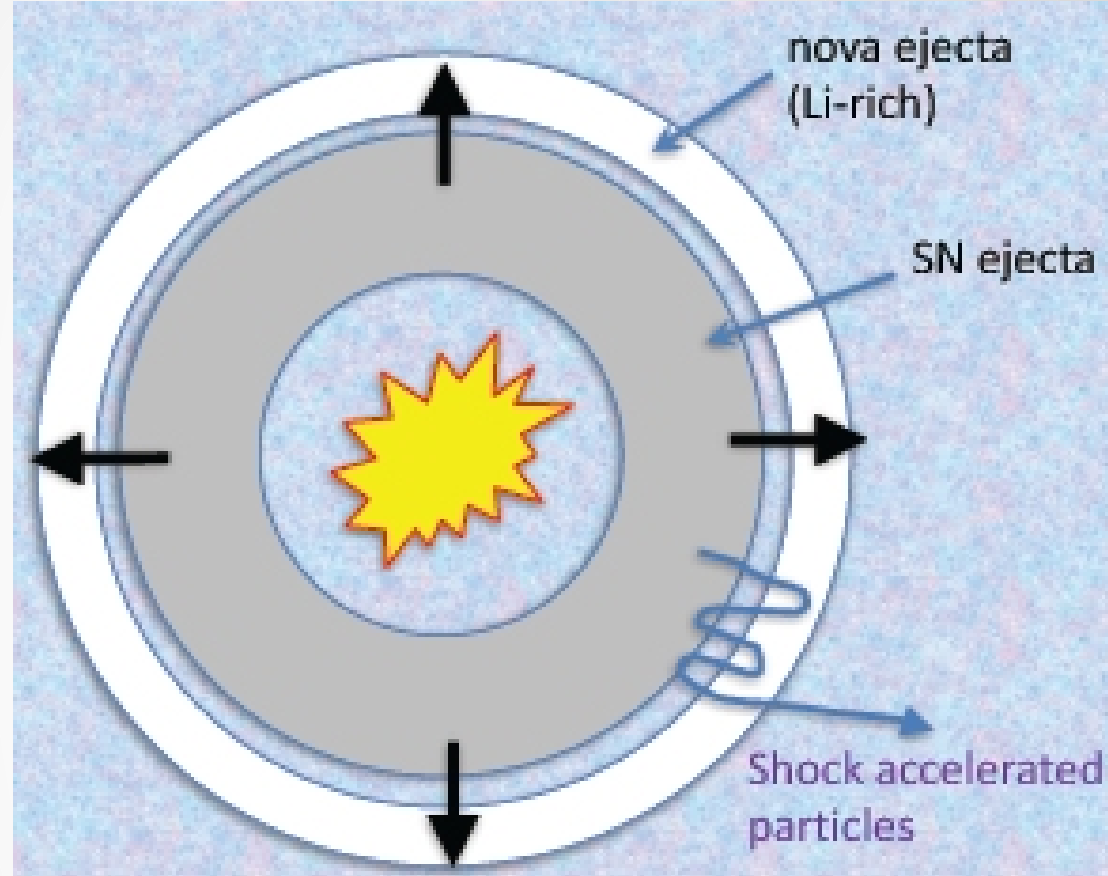
- 1) The extra component appears above ~ 300 GeV for each element.
- 2) The spectral indices are similar (~ 2.7)



Implying the common origin (primary CR Li source)?

Type Ia SN after nova eruptions?

- Observational evidence of ${}^7\text{Li}$ production in nova ejecta ($X_{\text{Li}} \sim 10^{-4}$; Tajitsu+ 2015, 2016)
- PTF 11kx: Type Ia SN interacting with multiple components of CSM = nova ejecta? (Dilday+ 2012)



Our hypothesis: *The extra CR Li (p/He as well) might be produced at a Ia SN remnant interacting with Li-rich nova ejecta erupted prior to the SN.*

What we have shown:

- If the extra CR components originate from a single SN, it should be located $< \sim 1$ kpc (local source!) and the age $< \sim 10^5$ years
- Total masses of CR p/He/Li and the abundance ratio of Hydrogen and Lithium in the extra CRs are consistent with our model.
- No excess in CR Be/B \square consistent