

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Galactic
 Total Time Requested: 60 hours Hours
 Minimum Useful Time: 30 min

Proposal Title: Observations of Li and BI: A Test Supernova Nucleosynthesis Models

ABSTRACT:

The abundances of lithium and boron provide important information about big-bang nucleosynthesis, Galactic chemical evolution, stellar evolution, cosmic-ray spallation reactions, and supernova processes. We propose an observational test the neutrino nucleosynthesis process in supernovae. We propose to observe the ground state radio frequency hyperfine-transitions of BI and Li I (at 732 MHz and 803 MHz) in the shocked molecular cloud associated with the IC443 SNR. Our observations will test supernova nucleosynthesis models that predict that a significant fraction of interstellar Li and B comes from neutrino induced spallation reactions in He and C shells of SN. We expect to detect Li and B because their localized abundances are predicted to be enhanced by 1000 - 10,000 times compared to their ISM abundances. Their ISM abundances are the result of different nucleosynthesis process plus mixing and dilution. However, even a negative result is important as it constrains SN nucleosynthesis models.

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Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

705-825

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

732.153

803.504