

# Light Element Nucleosynthesis through Measurements of Interstellar Boron

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## Abstract

With the aim of identifying the sources of light element (Li, Be, B, and F) synthesis, we propose a survey of interstellar boron. The B II line at 1362 Å will be used to extract the B column density along more than fifty sight lines, many of which are associated with regions of massive star formation shaped by core-collapse supernovae (SNe II). HST spectra are the only means for determining the elemental B abundance for sources outside the solar system. The survey will contain directions that are both molecule poor and molecule rich, thereby enabling us to examine the overall level of boron depletion onto grains as a function of gas density. Both the average density of neutral material along the line of sight and the density inferred from the fraction of neutral gas in molecular form will be incorporated into the analysis. We will seek sight lines with B abundances enhanced over the value seen in regions with the least depletion; such enhancements mainly arise from recent production of B-11. The boron column density, with the fluorine column density obtained from archival FUSE spectra of the F I line at 954 Å, will give the B/F abundance ratio. This ratio is a diagnostic of the importance of neutrino-induced spallation in SNe II in effecting synthesis of B and F, a process for which direct observational evidence is still lacking.

**Investigators:**

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Number of investigators: 3

**Dataset Summary:**

Instrument	No. of Datasets	Retrieval Method	Retrieval Plan
STIS	120	FTP	all datasets over the course of a month