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Contribution ID: 3865 Type: **Oral Competition (Graduate Student)** / **Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) A Displacement Device for Ion Extraction from Liquid Xenon

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Neutrinoless double beta decay is a proposed nuclear transition involving the emission of two electrons with no neutrinos. In ^{136}Xe , observing the ^{136}Ba daughter directly is a positive detection of double beta decay. This is barium tagging, and it would significantly enhance the signal to background ratio in experiments using a liquid xenon time projection chamber. However, extracting a single ion inside of a large cryogenic environment requires rapid and accurate motion of an ion collection probe. For this reason, we have developed a fine motion control apparatus to reliably position a thin capillary probe which enables the extraction and transport of single ions. I will present my work on the design and construction of the displacement apparatus along with studies on its ion extraction efficiency.

Keyword-1

Barium-Tagging

Keyword-2

Motion Control

Keyword-3

Ion Extraction

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