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A Modified MeVVA Ion Source for a Malmberg-Penning Trap[1]
DAVID K. OLSON, BRYAN G. PETERSON, GRANT W. HART, Brigham Young University — We have designed a new type of plasma gun ion source for a Malmberg-Penning trap based on Metal Vapor Vacuum Arc (MeVVA) ion source designs. Our primary intent with this MeVVA-type source is to create a confinable beryllium-7 (^{7}Be) plasma. The radioactivity of ^{7}Be requires us to replace the sample inside the ion source on a regular basis. Our design makes it possible to easily remove the cathode of the ion source from an ultra-high vacuum trap and exchange ^{7}Be samples while only needing to repressurize a small chamber rather than the entire trap. This design has an added benefit of being capable of generating plasmas from a wide variety of metals by simply exchanging the source target in the removable cathode. Because of this wide compatibility, we will be able to use our trap for studying any number of different plasmas, including other radioactive types.

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