**CARIBU electron beam ion source (EBIS) charge breeder magnetic field and drift tube modeling**

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ABSTRACT: Written last

1. Background
   1. CARIBU Upgrade
   2. EBIS charge breeder
      1. Purpose
      2. Design
2. Method
   1. Magnetic Field Modeling
      1. Determining the Force Exerted on the Turbo Pumps and Shields
      2. Determining the On-axis Magnetic Field Deviation Caused by the Pump Shielding
      3. Minimizing the Beam Deviation Due to the Shield’s B-Field
         1. Modeling VS. Analytical Solution Verification
         2. Design Requirements
   2. Drift Tube Modeling
      1. Determining the Effect of Drift Tube Misalignments on the Beam Emittance
3. Results
4. Conclusion