Abstract Submitted
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Control Improvements on the UCNτ Magnetic Mapper[1] RYAN COLON, Tennessee Technological University, UCNTAU COLLABORATION — The UCNτ experiment utilizes a 670-liter magnetic array designed for the purpose of trapping ultracold neutrons (UCN) with minimal sources of loss. The array uses over 5000 NdFeB magnets to achieve this purpose. Understanding the magnetic field generated by these magnets is key to the experiment, and so it is necessary to have a practical method of mapping the magnetic fields in the trap. This information is useful for ensuring the magnetic field is large enough everywhere to prevent UCNs from escaping and provides empirical inputs into spin dynamics simulations of the experiment. To efficiently collect the magnetic field information, a magnetic field mapping robotic arm was manufactured and implemented, and the efficiency of the arm continues to be improved upon. Control code was improved to allow for the automatic handling of critical errors during mapping runs. Specifically, code allowing for the arm to try and re-find a missed surface point and skip points that it fails to find was implemented; Additionally, code that allows the arm to continue an aborted mapping run with minimal user input after critical errors was developed. The control code additions and their effects on the running of the arm, as well as future control code improvements will be presented.

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