# Memorandum of Understanding

Dustin Keller

April 24, 2018

## 1 Purpose

The general objective of this Memorandum of Understanding (MOU) is to facilitate the transition of employment of Dustin Keller from the University of Virginia (Principal Scientist) to the University of New Hampshire (Research Professor) at the Physics Department with the interest of establishing a stable and independent research program in Nuclear Spin Physics funded by the Department of Energy.

## 2 Request for Position

The expectation is to be hired at the Research Professor level at a salary of \$90 K per year which will in part be paid by the Department of Energy. This is expected to be a non-tenured appointments made under a 5 year contract with the possibility of renewal with the interests of both parties.

## 3 Space Request

Under my present research program there exists a need to build up both an evaporation high cooling power solid polarization lab as well as dilution low-temperature lab, both sets of infrastructure could fit into a single lab space at the University of New Hampshire. The lab should ultimately have additional space for setting up and testing large scale superconducting magnets and low temperature cryogenic systems used for target polarization. There is considerable hardware expected to come from the University of Virginia,

Jefferson Labs and Los Alamos National Labs. A space is needs to house this equipment.

# 4 Startup Funding

Though much of the infrastructure for the initial setup of these labs can come from long term loans from the University of Virginia the over all greatest benefit to both parties can best be achieve by additional start-up funds that can support the construction of a UNH owned low temperature dilution refrigerator system for dynamically polarized target research in nuclear physics experiments. The construction of this type of dilution refrigerator can be constructed in house for $120K. It will also be necessary to purchase a warm bore superconducting magnet with the correct specifications to fit the fridge this has been quoted as $80K. The $^3$He, pipe assembly and pump system is expected to come from the University of Virginia. The University of Virginia will also loan the microwave generator and waveguide components. Los Alamos National Lab will donate a NMR system for polarization measurements.