Helium Recapture and Reliquefier System for Dynamic Nuclear Polarization at UNH

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Abstract:

This talk concerns the installation of a new helium recapture and reliquefaction system, consisting of a gas bag, manifold, cooling chiller, purifier, high pressure compressor and cylinder banks, in the dynamic nuclear polarized target lab at University of New Hampshire. This new system has the capability to improve the efficiency of target polarizations runs by recycling our cryogenic helium which would otherwise be lost during polarization operations. Our helium liquefier is rated to 40 L/Day under normal full-capacity operations with 800L capacity. I will explain the initial installation process followed by a discussion of the challenges with installation, including issues of impurities which appeared during the initial operation of the system. Then I will discuss how we overcome these difficulties. Finally, I will discuss the function of the system during normal operation and the present situation of the helium recapture and reliquification processing in our lab.