



UNIVERSITY OF VIRGINIA



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HiFROST MANUAL

The $\text{HI}\gamma\text{S}$ Frozen Spin Target

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Preface

HiFrost is nuclear polarized target apparatus consisting of a dilution refrigerator, internal “holding” magnetic coil, microwave guide and NMR coil. External components of HiFrost include a polarizing magnet, microwave generating EIO, pump and vacuum system to run the dilution refrigerator, and the Q-Meter/Yale Card set up for running the NMR.

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Chapter 1

History

1.1 Inception

1.2 CERN

1.3 Geesthacht

1.4 Virginia

1.5 Duke

Chapter 2

Theory of Operation

2.1 Nuclear Polarization

2.1.1 DNP

2.2 NMR

2.3 Frozen Spin

2.4 Dilution Refrigerator

Chapter 3

Fridge Tools

3.1 tools

tools!

3.1.1 small tools

screw drivers

3.1.2 big tools

da fridge

Chapter 4

Alternative Rings

4.1 Definitions

4.2 The Cayley Numbers

4.3 Zorn's Vector Matrix Algebra

