MYSTERIES OF MATTER

INTRODUCTION

Welcome & security announcement

What is matter ? States of matter ?

Liquid nitrogen – safety [-196°C, 20 million L]

PHASE TRANSITIONS - LIQUID

Boiling: liquid nitrogen in double glass cylinder

Fog and Ice: liquid nitrogen in water

PRESSURE - GAS

Balloon in liquid nitrogen

Liquid nitrogen in **bottle – balloon and cap** [1L liquid = 690L gaz]

(Optional: ping pong ball in liquid nitrogen)

MATERIAL CHANGE - SOLID

Rubber Tube in liquid nitrogen

Ring and ball apparatus [LHC shrinks 80m]

- SUPERCONDUCTOR

(optional : Eddy currents in copper/plastic tubes)

Superconducting levitation demo [YBCO: Yttrium, Barium, Copper Oxide]

Superconducting levitating train

PLASMA

Plasma ball

Fluorescent tube

WRAP UP & OVERVIEW