

# Chapter 1

## Setting Sensitivity Limits On HNLs

Chapter 9 Opening

## **1.1 Systematic Uncertainties**

### **1.1.1 Error Propagation Formulation**

### **1.1.2 Signal Uncertainties**

### **1.1.3 Background Uncertainties**

## **1.2 Limits Setting Procedure**

### **1.2.1 Hypothesis Definition**

### **1.2.2 Likelihood-based Test Statistic**

### **1.2.3 The $CL_s$ Method**

### **1.2.4 Computing Test Statistic Distributions**

### **1.2.5 Setting The Upper Limits**

## **1.3 Results**

### **1.3.1 Expected Limits on Majorana HNLS**

### **1.3.2 Comparison With Other Experiments**

## **1.4 Concluding Remarks**