2   Standard References/Books (@Library)

1. *Techniques for Nuclear and Particle Physics Experiments, A how to approach* by **W. R. Leo**

2. *Radiation Detection and Measurement* by **Glenn F. Knoll**

3. Bubble Chamber: *The data is collected at PU. Some basics of this is covered here:* `https://www.youtube.com/watch?v=csWhZS3AdRE`. *On bubble chamber:* `https://www.youtube.com/watch?v=XsIXH2M7qLY`

4. *Physics of Physics of Particle and Radiation Detection* Astropaticle Physics book by Claus Grupen

2.1   References: Relevant Chapters and Sections

1. *Geiger Muller Counter*: **Leo** – Chapter 6, beginning up to \$6.1, \$6.5.2, and **Knoll** – Chapter 7

2. *Dead time*: **Knoll** – \$4.VII (A to D)

3. *Gamma-ray spectroscopy and related concepts*: **Knoll** – Chapter 8 beginning paragraphs before subsection start, \$II-B1; Chapter 9 Introduction, \$II, \$VII; Chapter 10 beginning to \$II, \$III point #5 effect of surrounding material, Energy resolution; **Leo** – beginning to \$7.1, \$7.7

4. *Particle interaction and detection*: **Leo** – Chapter 2: begining till \$2.2 basic part (heavy particles), \$2.4 and subsections – basic part only (e^+e^- – light particles), \$2.7 and subsections (photons); **Knoll** – Chapter 2 (derivation can be ignored but the final form and dependency is very important)

5. *Nuclear counting statistics and measurements*: **Knoll** – Chapter 3 and **Leo** – Chapter 4

6. **Read the two experiment manuals**: (at least the relevant sections) provided by the Instrument designer (Nucleonix: **GRS** – PHY411_grsExpMan_v1.pdf; **GM** – PHY411_GM_exp.p

7. *Radiation protection and Biological effects*: **Leo** – chapter 3

    **Note: Many of these subsections in the Leo's Book have examples. Please go through to imbibe the concepts involved. Quiz or viva will be based on these concepts.

8. **General and basics of Nuclear decay:** Chapter-1 of **Leo** + Examples 1.1 & 1.2 (rate and rate error)

9. **Statistics and Data:** Chapter-4 of **Leo** + Section 4.5.3 examples