Previous lecture

- Kinematics, 4-momentum
  - details on handout
- neutrino properties
  - neutrino mass

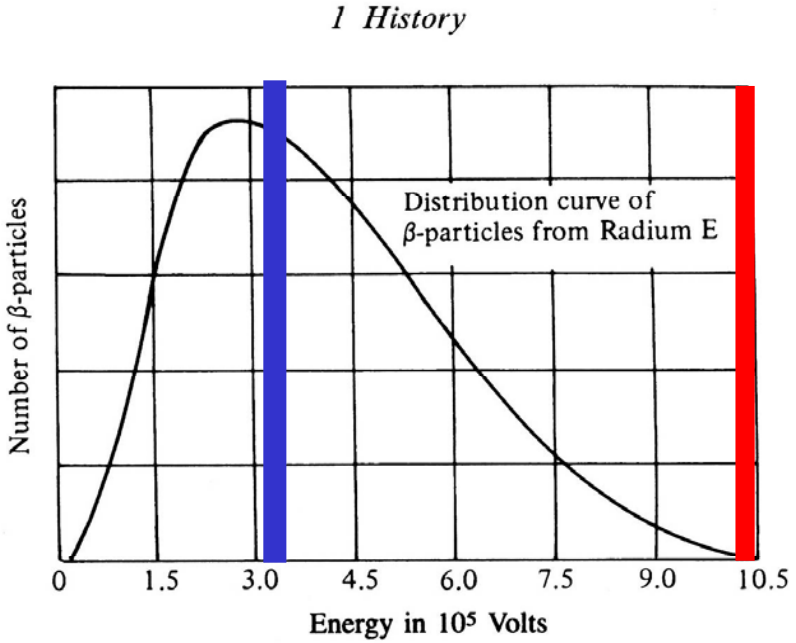


Fig. 1 Continuous beta spectrum of RaE.

ν mass references

Winter: pp. 9-11, 127-131
Perkins (2nd Ed.): pp. 220-226
Burcham + Jobes: pp 165-167

Lecture Content

- Approx. lecture content
  1. PP intro
  2. PP intro.
     - Feynman diagrams; strong/e.m./weak
  3. ν props 1:, baryon and lepton numbers; no. neutrino generations
  4. ν props 2: ν existence
     - Examples of decay/production
  5. Neutrino mass
     - Fermi-Kurie plot
     - Phase space kinematics/4-momentum
  6. Parity and CP violation… (why so important in lepton sector?)
     - Wu et al., 60Co experiment
  7. Detection & observation
     - Liquid, solid, bubble chamber
     - "Direct" methods (DONUT)
  8. Solar and atmospheric neutrinos
     - Puzzle: relative abundances != SSM prediction
     - Two-flavour neutrino oscillation formalism
  9. Neutrino oscillations and mixing
     - Possible solutions to solar/atm. ν problems
  10. Current and future experiments
      - SK, SNO, KAMLAND, CHOOZ
      - MINOS, miniBOONE,..
      - NDBD (NEMO, etc.)
      - JPARC, νF,
  11. Implications for cosmology
      - Open vs. closed scenarios. various m_ν regions
      - ν as DM candidate?
      - Subject outlook (JPARC, MICE, Neutrino Factory, …)

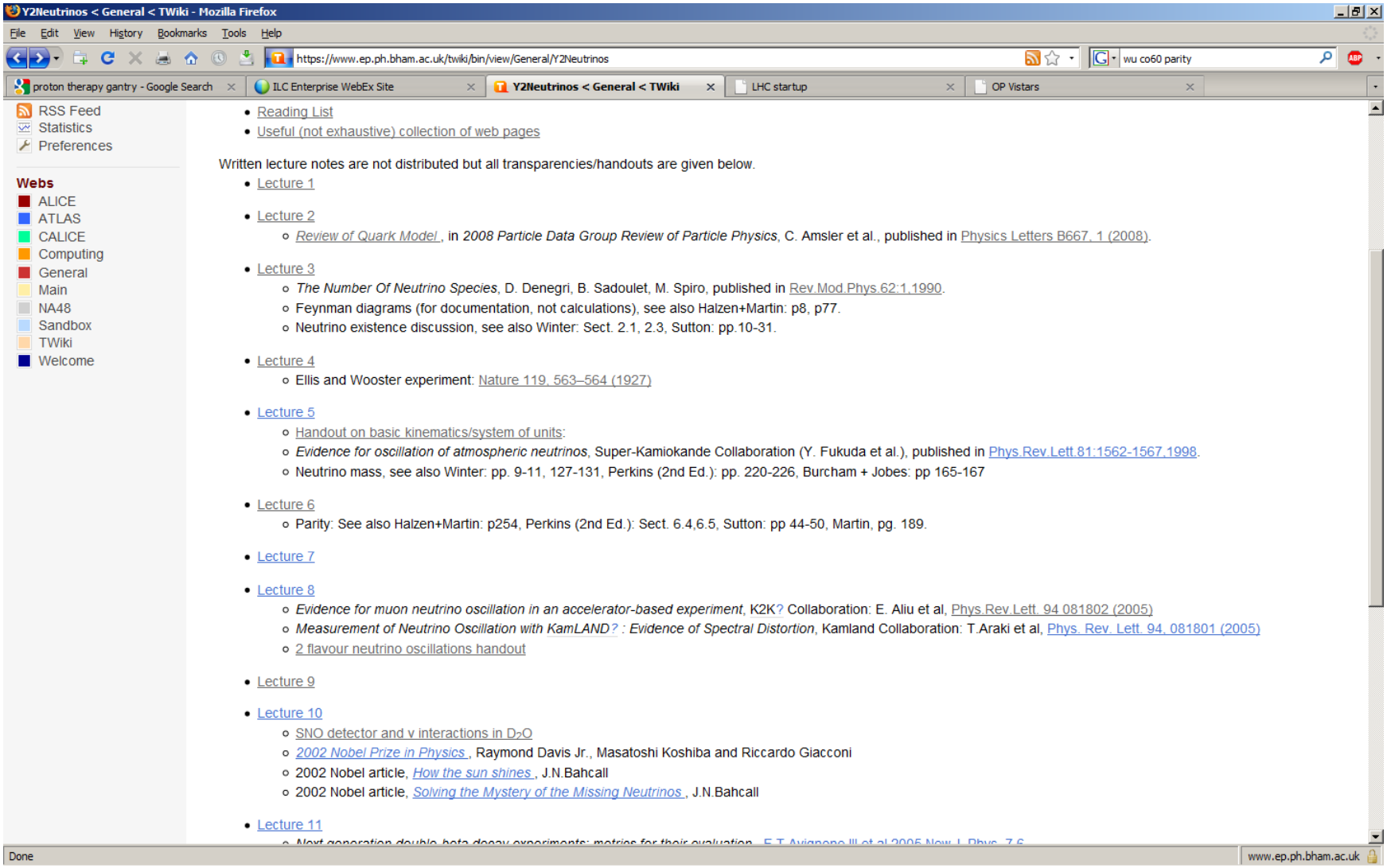
Today

- Neutrino mass,conference results → web
- Kinematics – handout to lecture 5
- Parity symmetry
  - test of parity in weak decay

Halzen+Martin: p254
Perkins (2nd Ed.): 6.4,6.5
Sutton: pp 44-50

Summary of lecture questionnaire results

Course homepage



Free format comments

- Questionnaire given out too early for good judgement on problems and reading list
- Notes on board too bullet point like
- More quantitative/numerical examples
- Are lecture notes on WebCT
- Graphs/data showed a little hard to understand
- Go a little slower/explain graphs in more detail
- Notes on board not self-conclusive, sometimes hard to follow
- Give more theoretical background to material
- Quark content of certain particles hard to determine
- Print out of slides very small so hard to read