

# Paper(s) 3: $J/\Psi$ discovery – Particle Physics – Summer 2016

N. Berger, F. Wauters

hand in: Mo 13.6. (in the lecture)

Reference 1: *Experimental Observation of a Heavy Particle  $J/\Psi$* , J. J. Aubert *et al.*, Phys. Rev. Lett. **33**, 1404 (1974).

Reference 2: *Discovery of a Narrow Resonance in  $e^+e^-$  Annihilation*, J. -E. Augustin *et al.*, Phys. Rev. Lett. **33**, 1406 (1974).

**3.1 Describe two major differences between the two experiments.**

**3.2 What limits the energy resolution of the second?**

**3.3 What is Ref. 4 in the first paper about?**

**3.4 What is the physical width of the  $J/\Psi$ ? What is the branching ratio of  $J/\Psi \rightarrow e^+e^-$ ?**

**3.5 Explain the right-hand tail of the resonance in Fig. 1 of the second paper.**

**3.6 Something from the paper I do not understand:**

Note: Bring the paper/your notes with you to the discussion session, which should be seen as a *Journal Club*.