

# The November $J/\psi$ Revolution

Recollections and comments

Mario Spinetti (LNF -  $\gamma\gamma 2$ )

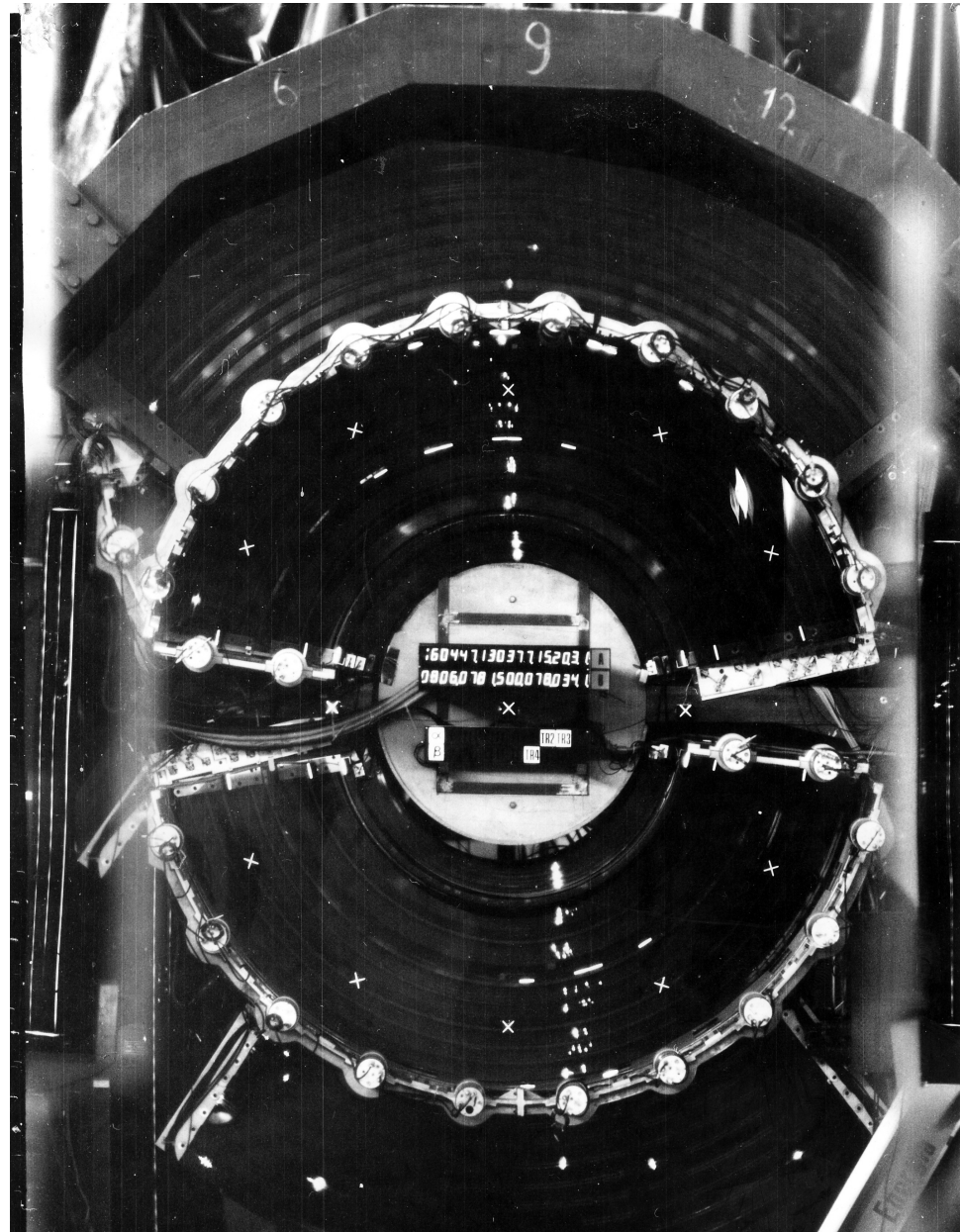


# $\gamma\gamma^2$ authors of first $J/\Psi$ paper

- C. Bacci, R. Baldini Celio, M. Bernardini,  
G. Capon, R. Del Fabbro, M. Grilli, E. Iarocci,  
L. Jones, M. Locci, C. Mencuccini, G. P.  
Murtas, G. Penso, G. Salvini, M. Spano, M.  
Spinetti, B. Stella, V. Valente,

# $\gamma\gamma 2$ detector

- Array of cylindrical spark chambers interleaved with lead to separate showers (e and  $\gamma$ ) and tracks
- Scintillation counters for trigger and pattern
- Events registered on 70mm film in rolls of 1200 events. The camera was placed in the center of Adone
- Laben computer online to read out Camac modules (ADC, scalars, etc)

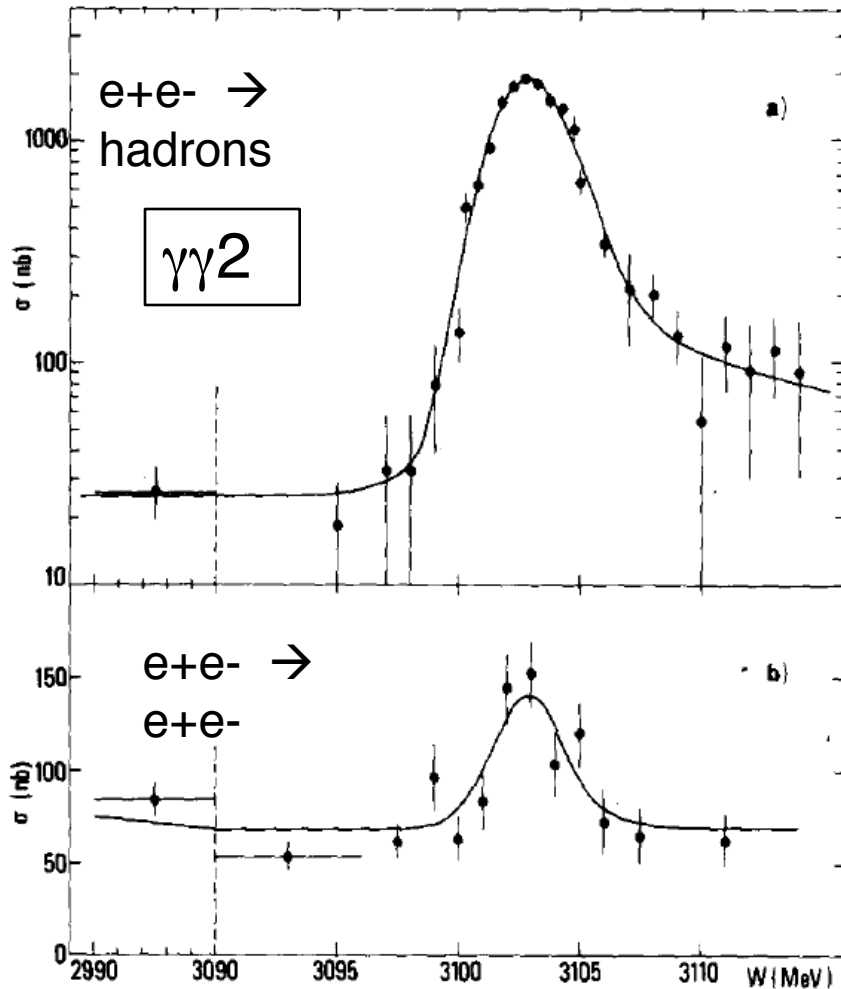


# Hunting the $J/\psi$

- 11-12/11/1974: G. Bellettini (LNF director) receives news about a narrow resonance at 3095 MeV to be checked with Adone
- 12/11/1974 : G. Salvini ( in absence of F.Amman) took the risk of running Adone beyond the limit of the machine project: start energy 3080 MeV, 0,5 MeV of steps, 0,3 nb<sup>-1</sup> of luminosity
- 13/11/1974 : no sign of the resonance. Many doubts and long discussions. Decision: go on with 1 Mev steps
- 13-14/11/1974 : during the night the  $J/\psi$  was found at **3121 MeV**. The magnets saturation altereted the relation between magnet current and the true beam energy of about **20 MeV**

Counting rate **60 times** the standard

From the center of Adone there was fantastic\_view of the  $J/\psi$  events directly inside the detector like **fireworks!**



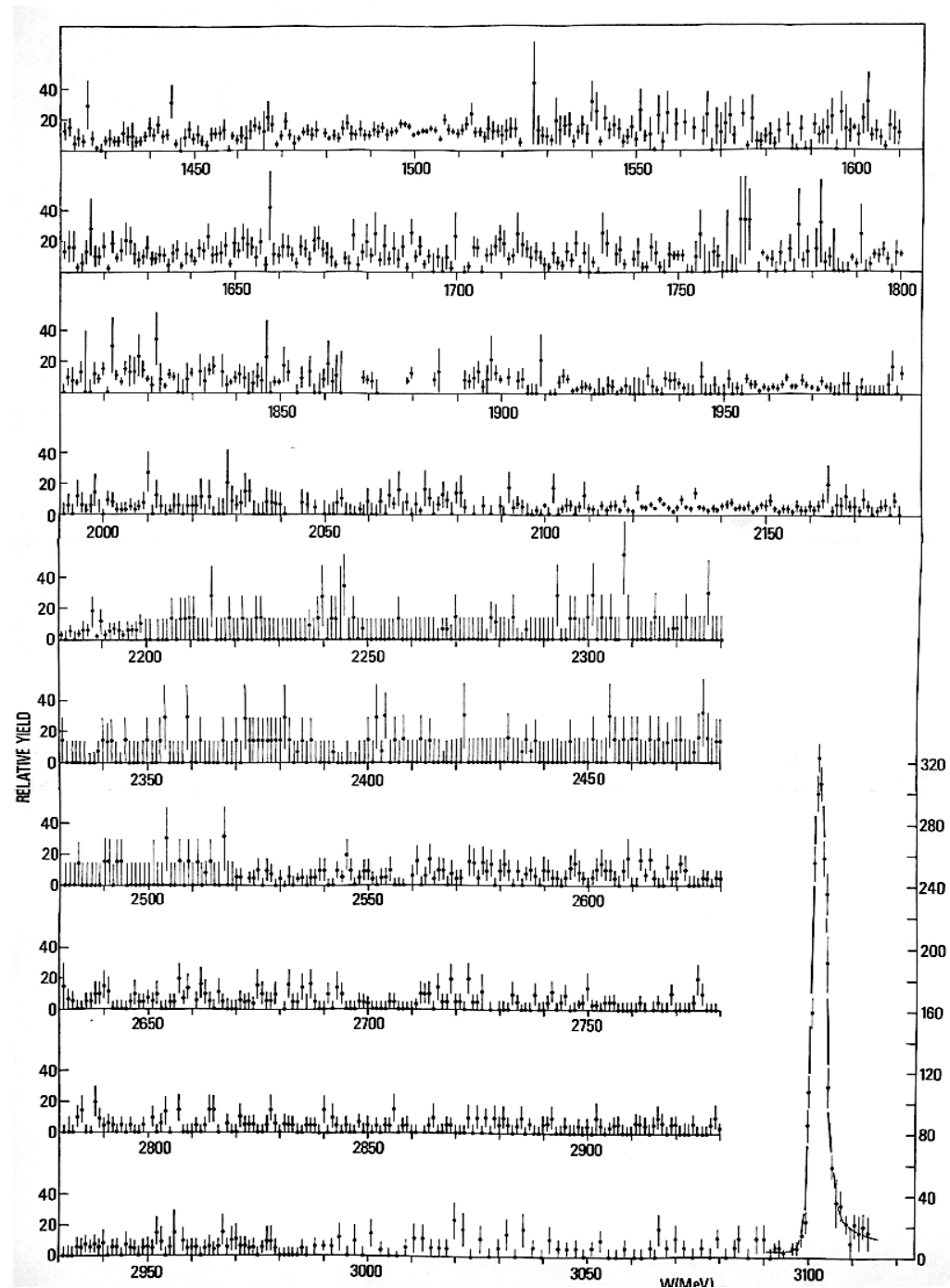
Hadronic rate  
at peak / off peak  $\sim 60$

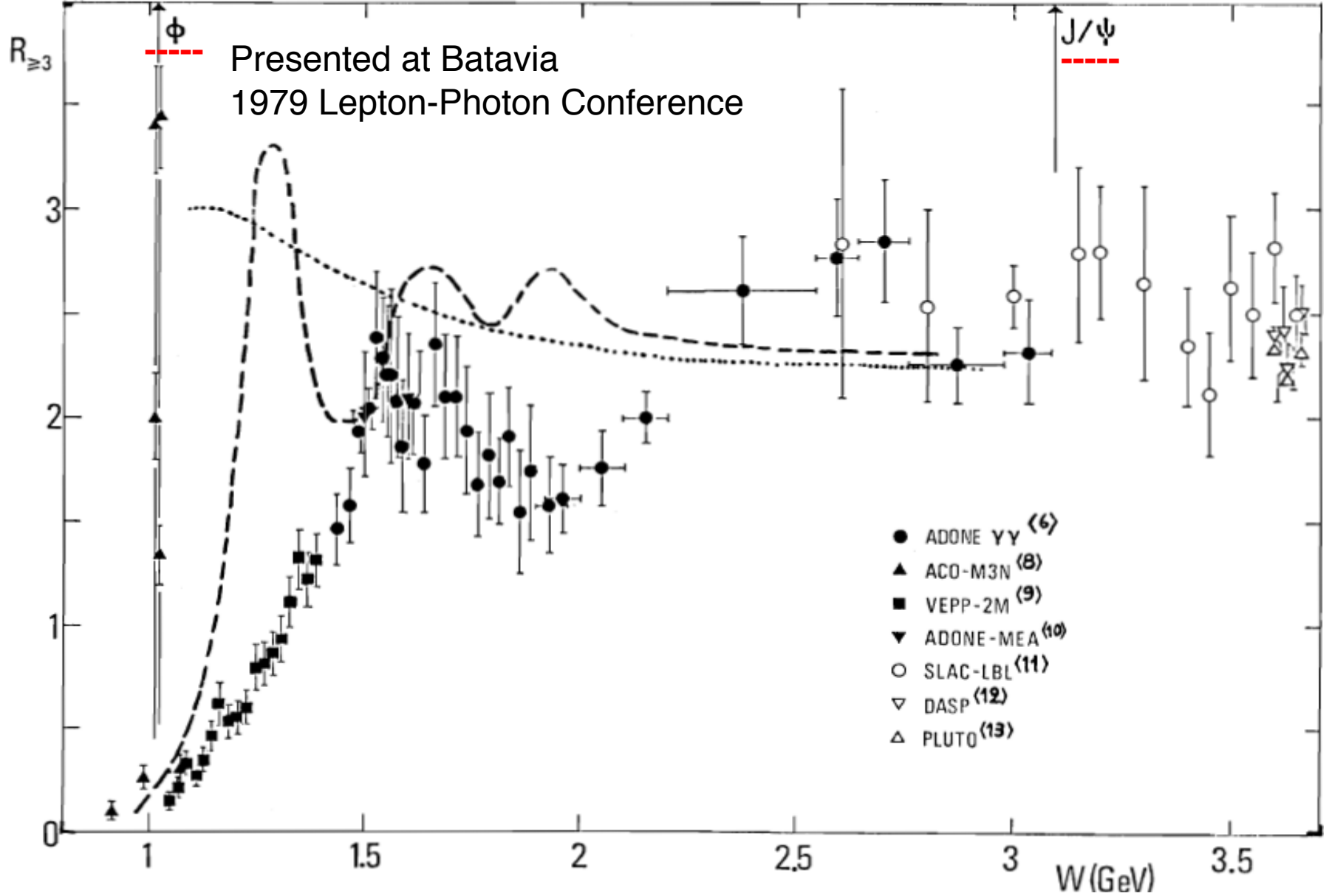
With radiative corrections

$$\Gamma_e = (4.6 \pm 0.8) \text{ KeV}, \quad \Gamma_h = (59 \pm 24) \text{ KeV}, \quad \text{and} \quad \Gamma = (68 \pm 26) \text{ KeV}$$

# What next

- After  $J/\psi$ , Adone runned in 1 MeV step to check any other narrow structure for about 4 year.
- Hints at 1.5 GeV and 1.8 GeV were found but not enough statistic to confirme them.
- Adone stops in 1977 the 2 beams operations
- Then all the collected data have been revised and plotted here aside.
- These data have also used to measure the R ratio of multi-hadronic production (next plot)





- VDM and QCD models do not fit the data.
- Some more effort to interpret the data would be necessary