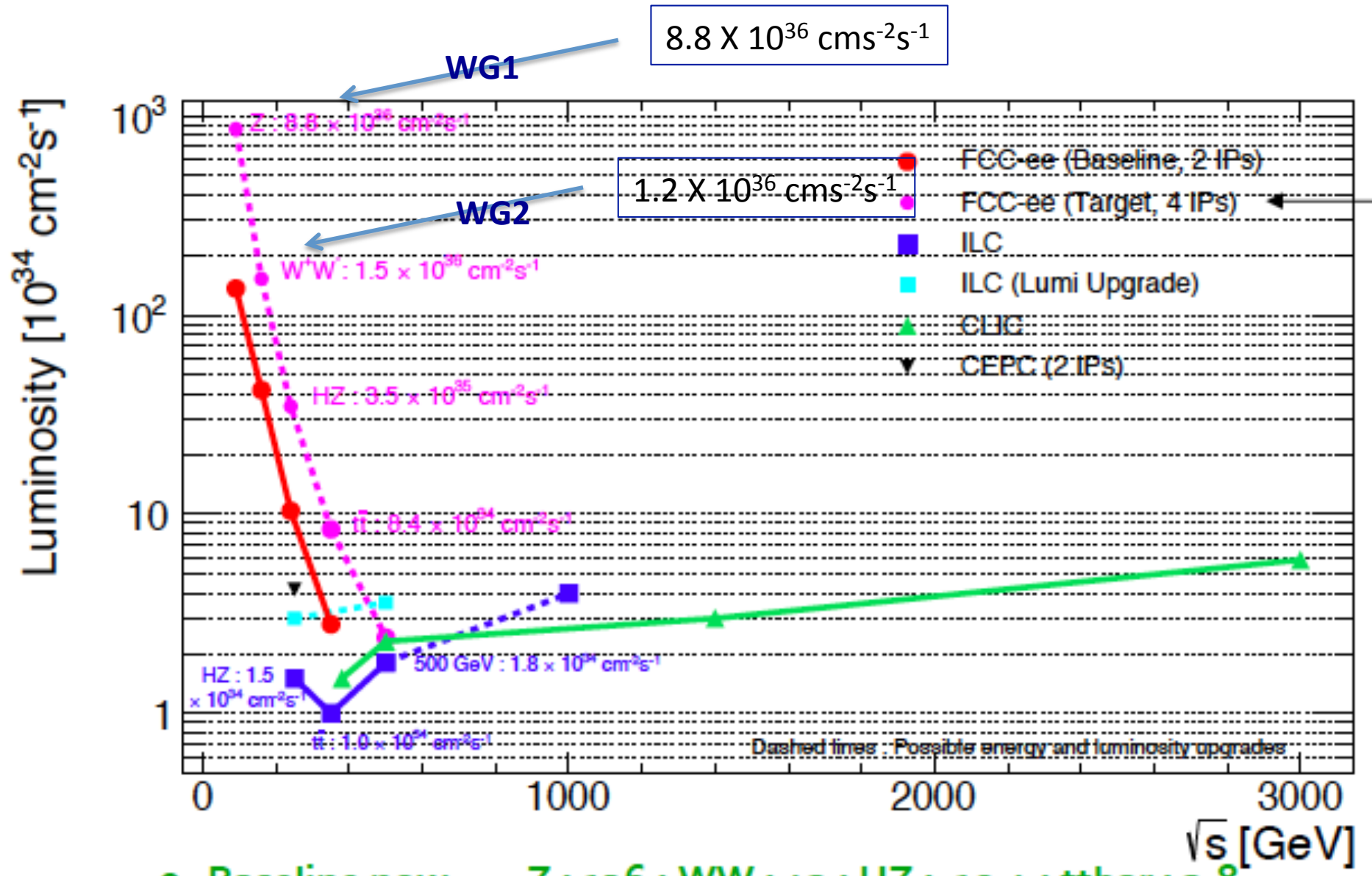


10th FCC-ee Workshop
4-5 Feb 2016

Z and W groups status and plans

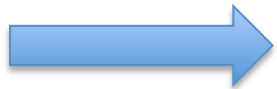
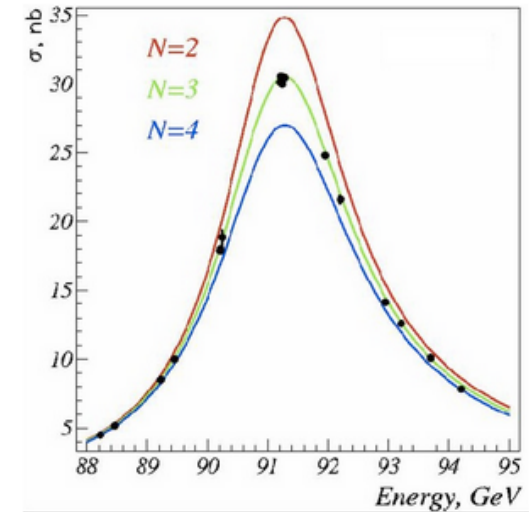
Conveners:

Fulvio Piccinini, Roberto Tenchini



WG1: Electroweak Physics at the Z pole

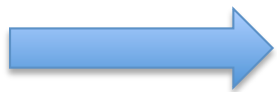
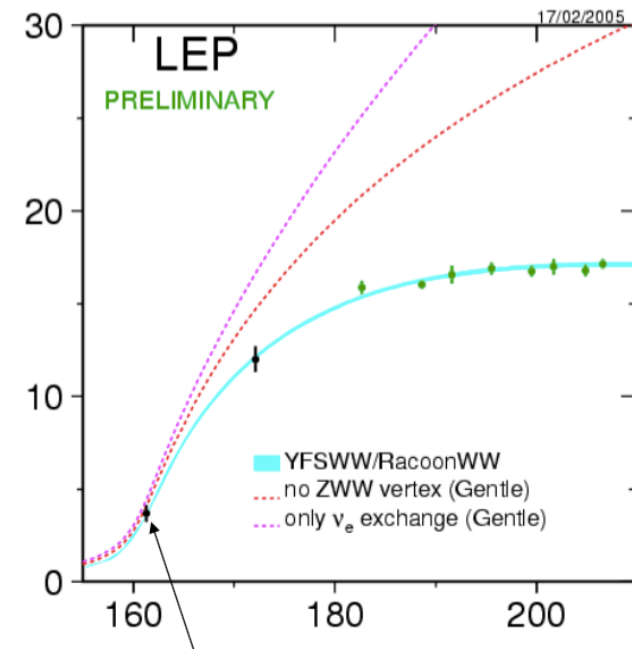
- Subgroups
 - Z lineshape and neutrino families
 - Asimmetries at the Z



Opportunity: seeking subgroup conveners

WG2: Diboson physics and W mass measurement

- Subgroups
 - W mass and W properties
[convener **Elizabeth Locci**]
 - Triple and Quartic Coupling
 - Z radiative returns



Opportunity: seeking subgroup conveners

Work packages available

- WG1

- Study $Z \rightarrow \mu\mu$ tracking efficiency and acceptance with various detectors in *Delphes* (ideally should include misalignments scenarios)
- Study photon detection efficiency and energy resolution for $Z+\gamma$ events above the Z pole (*Delphes*)
- Study the b asymmetry precision in the semi-muonic $Z \rightarrow b\bar{b}$ channel (*Delphes*)
- Revise the radiator functions used at LEP for the Z lineshape (*theory*)
- Study the accuracy of the left-right asymmetry measurement with various beam polarization parameters (*work with machine people*)
- Study of the transverse polarization and energy calibration systematics (IR region, earth movements etc.)

Work packages available

- **WG2**

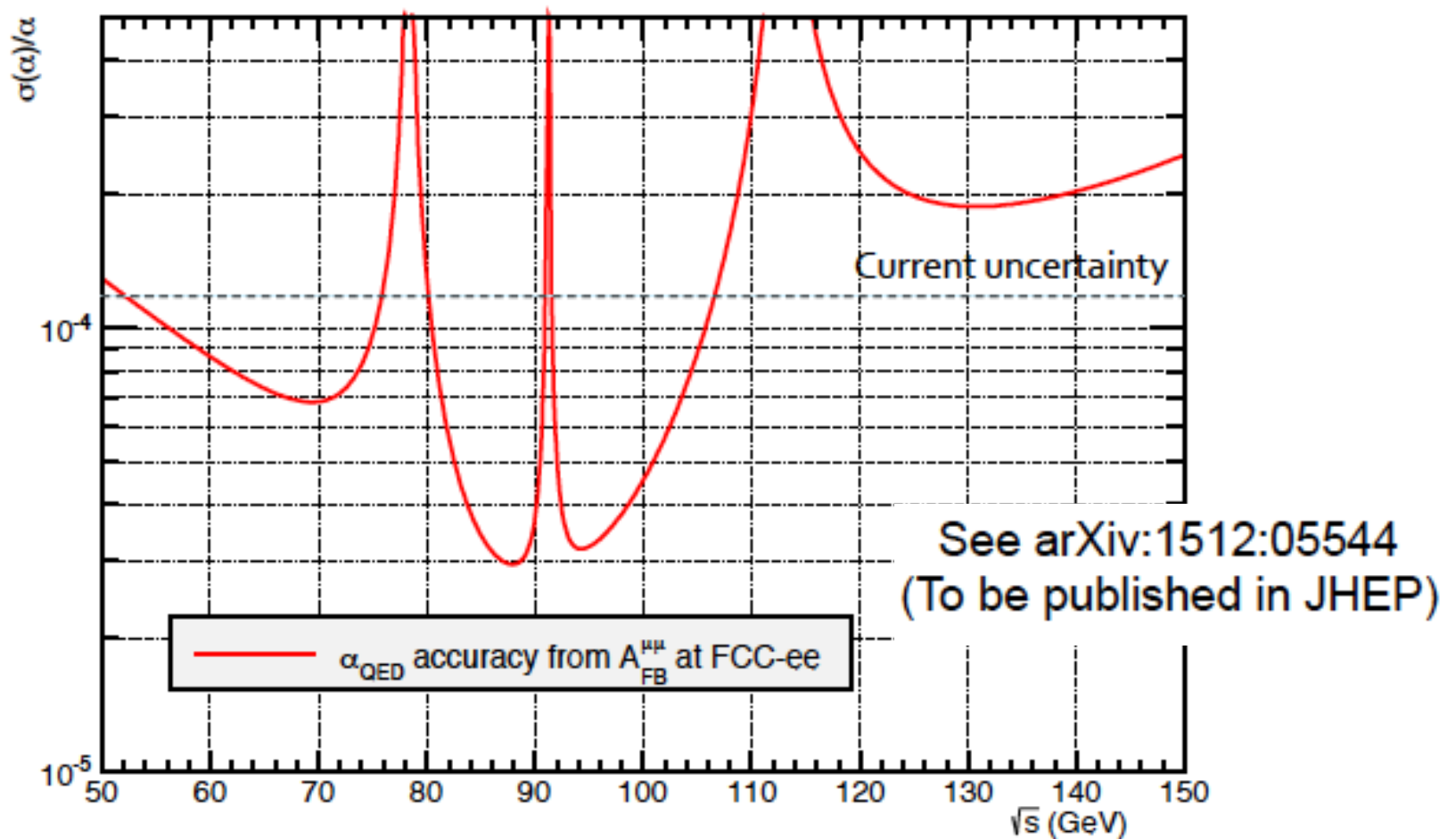
- Study precision of W mass from threshold scan, as a function of beam parameters, luminosity and scan strategy (**WW** selection efficiency and **bkg** studies with *Delphes*)
- Study two-jet invariant mass resolution in **WW muon+jets** events with various detectors in *Delphes* (with and without kinematic fits)
- Same as above, but with **boosted Z**
- Study precision of measurement of W production angle in **WW muon+jets** events with various detectors in *Delphes* (with and without kinematic fits) [could extend to other angles interesting for TGC, QGC measurements]

TWO EXAMPLES OF RECENT PROGRESSES



Develop new ideas suitable for very high statistics, go beyond what has been already done at LEP

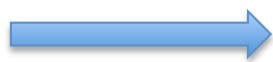
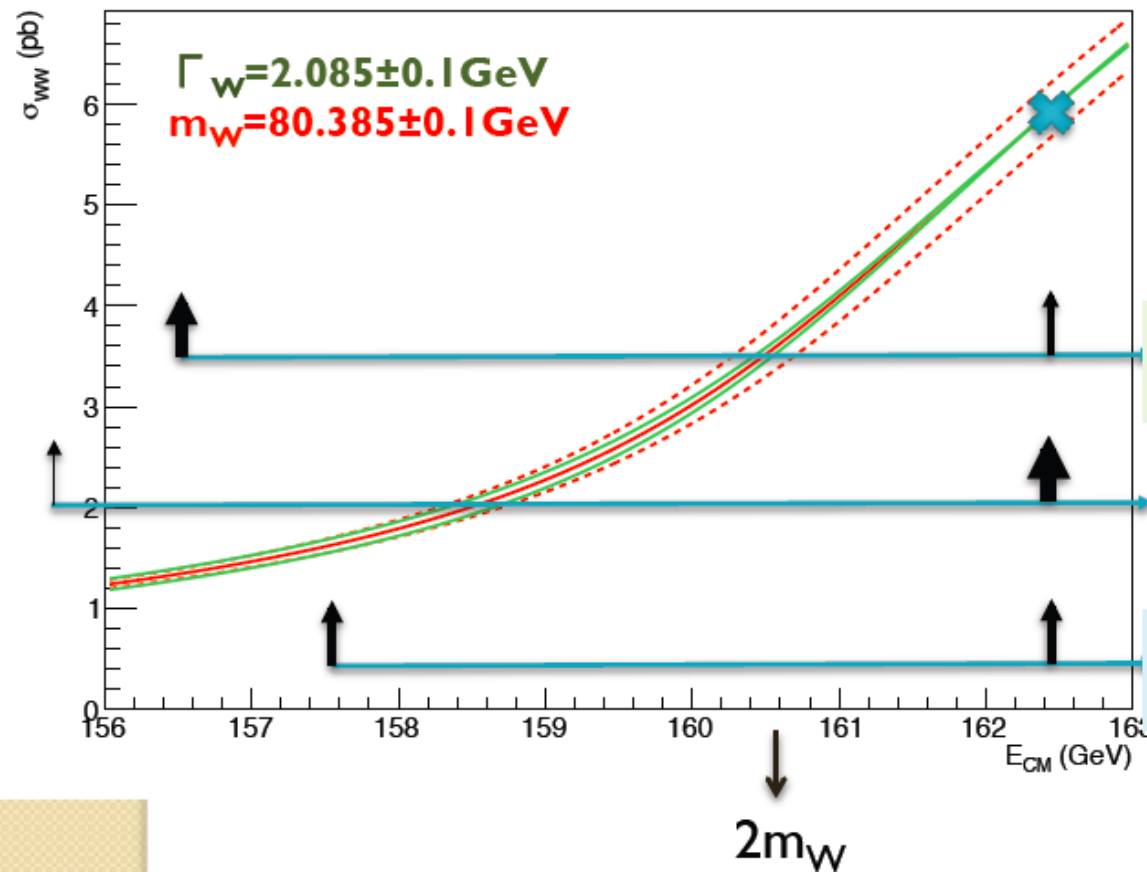
$\alpha_{\text{QED}}(m_Z)$ from $A_{\text{FB}}(\mu^+\mu^-)$ (Patrick Janot)



need full-2 loop and maybe 3-loop ew calculations !

W mass and width from scan (Paolo Azzurri)

m_W & Γ_W from σ_{WW}



Need a strategy to tackle background