

APC team news

Giovanni Marchiori

FCC France - contacts meeting
19 March 2021



Local team

- Current team composition
 - Staff: Gregorio Bernardi, GM
 - Students: Ang Li
 - More people in team, but working on ATLAS 100%
- Short-term evolution
 - 1 M2 internship (SU) starting soon (29/03-26/06) w/ GM
 - 1 M1 (SU) and 1 L3 (ENS) internships starting around June (~2 months), w/ GB and GM respectively
- Activities on case studies:
 - ZH inclusive xsection measurement (actively ongoing: Ang+Greg, further aid by M1 internship)
 - H->bb/cc/gg BRs (very slow progress: GM, but should gain momentum with M2 and L3 internships)

ZH inclusive xsection measurement

- First results presented by Ang in 2nd FCC France workshop, focusing on dimuon channel: https://indico.in2p3.fr/event/23012/contributions/89963/attachments/62029/84792/2021_01_21_FCC_Ang_LI_Ver2.pdf

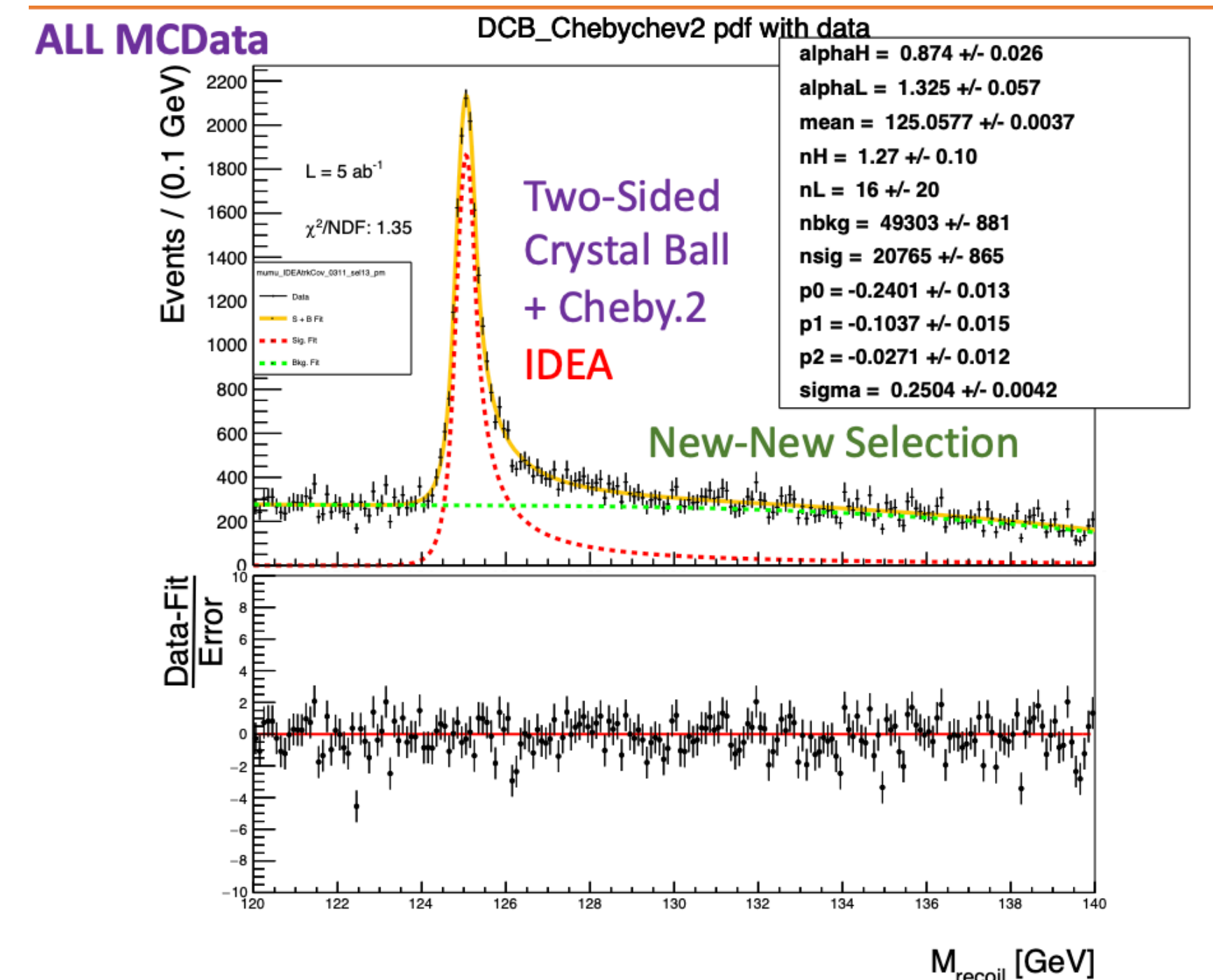
- A few issues identified:

- Bias in fitted signal yield
- Few % stat uncertainty in fitted signal yield

- Recent developments (still on dimuon channel):

- Move to new data model
- Improved selection (similar to ILC)
 - -15% bkg, -3.5% signal

1. At least one μ^+ one μ^-
2. Z from pair of $\mu^+\mu^-$
3. At least One Z boson,
4. $m_Z \in [80, 100]$ GeV
5. $p_T^Z \in [20, +\infty]$ GeV



- Several fits performed with signal parameters floating or fixed to understand origin of large uncertainty and biases
 - Found that fixing signal high tail parameters lead to closure and stat. uncertainty $\sim 1.3\%$