

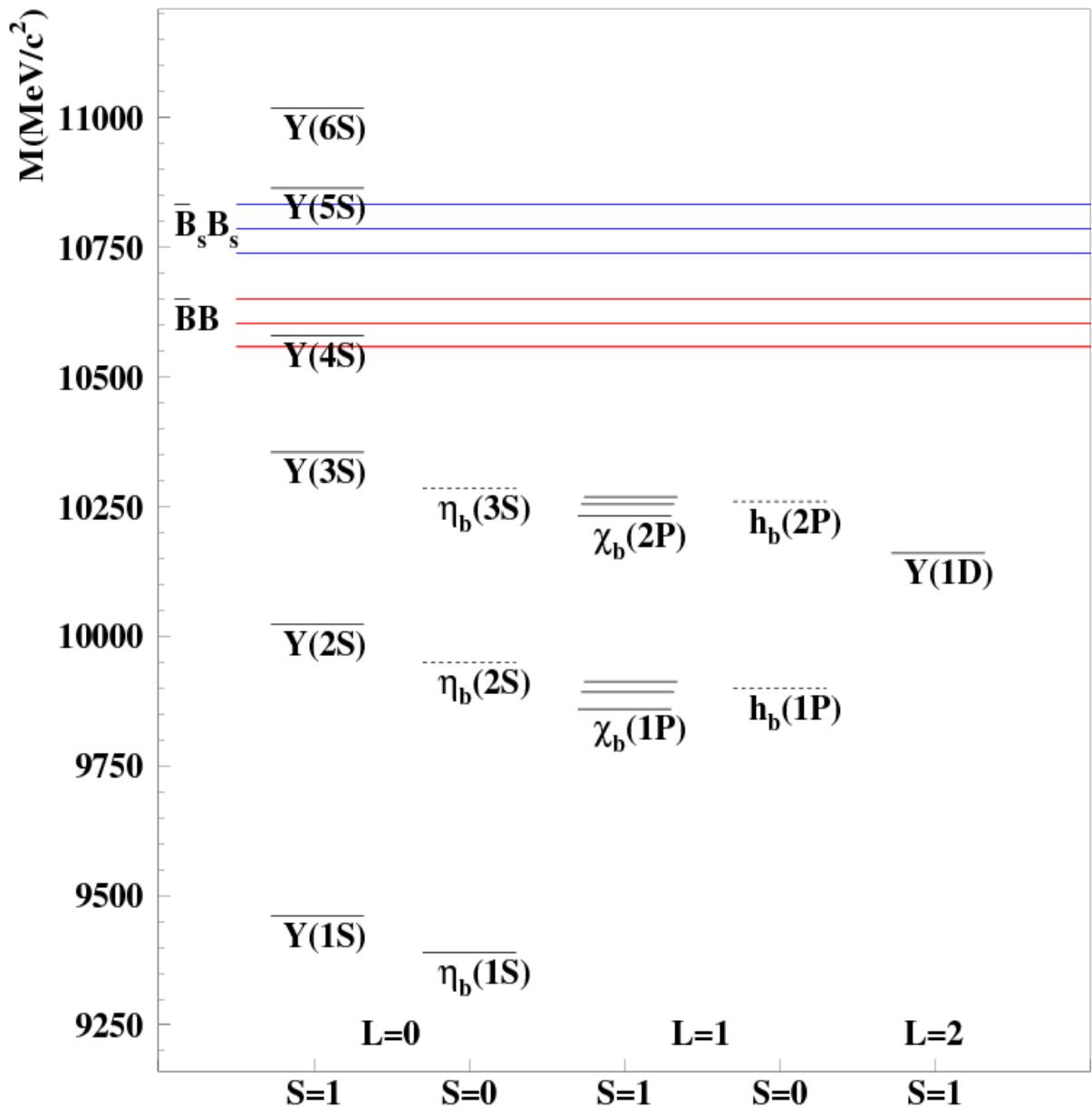
Status of Bottomonium section



4th Legacy Book
Workshop

Annecy, July 1st,
2011

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Still lots of progress being done...

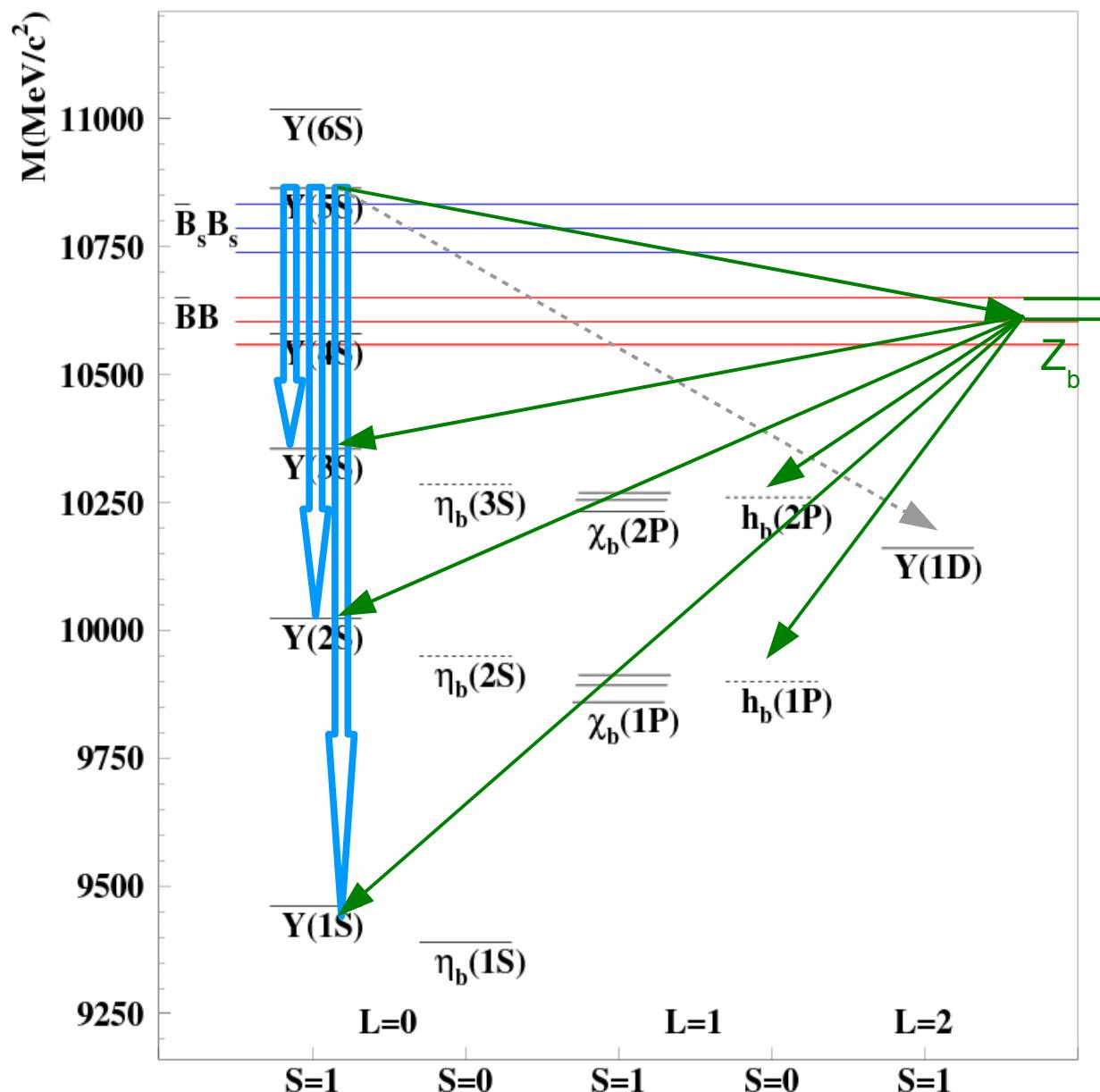
A.Bondar @ FPCP2011

Z_b

Its discovery impacts on :

Subsection 15.3.3
Spectroscopy

Subsection 15.3.4
Decays

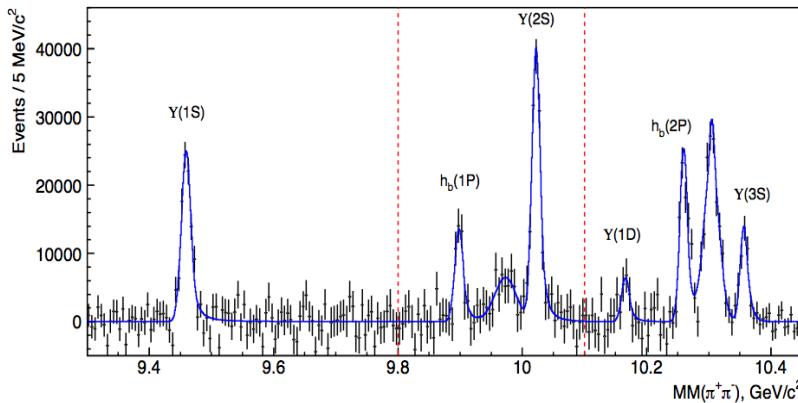


Subsection 15.3.3 Spectroscopy

15.3.3.1 Discovery of eta_b(1S), eta_b(2S)?

[FULSOM]

15.3.3.2 Discovery of h_b(1,2P)



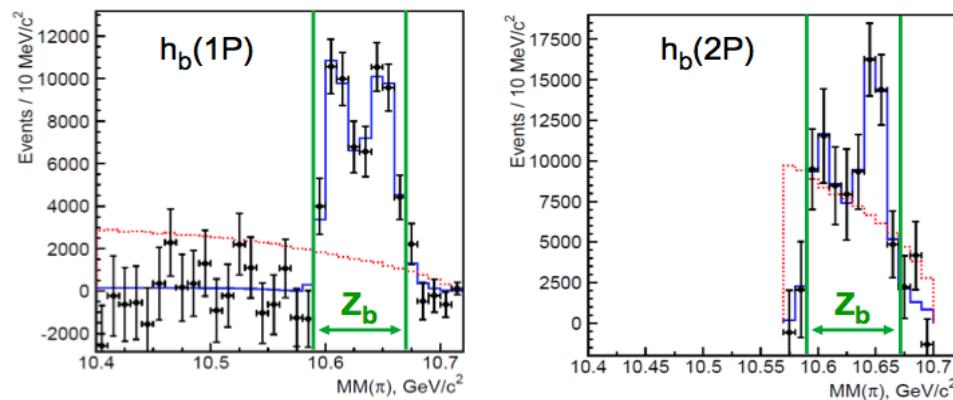
[ASNER], needs update

15.3.3.3 D-wave bottomonia: *only the S=1 ones?*

PRDD82 (2010) 111102

15.3.3.4 Discovery of Zb's

To be discussed : should we list charged bottomonia in a different section? (Y(5S)?)



15.3.3.5 Yb(10890) phenomenology: *also this subsection will change*

Subsection 15.3.4: Transitions

15.3.4.0 Theory intro on both radiative and hadronic transitions

15.3.4.1 Radiative Transitions

15.3.4.1 E1 [arXiv:1104.5254](#)

Using of conversions, substantial progress on hidden transitions, and on decoupling of different chi_J contributions

15.3.4.1.2 M1 in etab section?

15.3.4.1.3 M2: angular distributions?

15.3.4.2 Dipion Transitions

Chi_b,Y(123S): [arXiv:1105.4234](#)

Y(1D) transitions: [PRDD82 \(2010\) 111102](#)

Y(5S) --> Y(1,2,3S),h_b(1,2P),Y(1D): [arXiv:1103.3419](#)

15.3.4.3 Eta, Omega, Pi Transitions

15.3.4.3.1 Searches for Y(2,3S) --> eta Y(1S)

Summer conferences , then writeup

15.3.4.3.2 Observation of Y(4S) --> eta Y(1S)

[PRDD78 \(2008\) 112002](#) , mature for writeup

Subsection 15.3.5: Decays

15.3.5.1 Leptonic Decays

*On most of these topics there are analyses in Belle,
3-4 new results by end of this year:*

15.3.5.2 Radiative Transitions to Light Mesons

15.3.5.3 Hadronic Annihilations: Exclusive Modes

15.3.5.4 Inclusive Particle Production in Hadronic Annihilations

This should be available before summer:

15.3.5.5 Radiative Transitions to Charmonia:

PRD 82, 051504 + another soon writeup requested to C.P.Shen

Subsection 15.3.6: Beyond Standard Model [SEKULA]

15.3.6.1 Light Higgs Searches: *mature for writeup*

15.3.6.2 Light Dark Matter Searches: *mature for writeup*

15.3.6.3 Search for Lepton Flavor violation: *work in progress*

15.3.6.4 Tests of Lepton Universality: *work in progress*

15.3.6.5 *Dark Forces?*

