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## Bottomonium vector resonances and threshold effects

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The bottomonium spectrum is a perfect testing ground for the QCD confining potential and unitarisation effects. First of all, the bottom quark is about three times heavier than the charm quark, so that  $b\bar{b}$  systems probe much more the short-range region of that potential. Secondly, the much smaller colour-hyperfine interaction in the  $B$  meson makes the  $B\bar{B}$  threshold lie significantly higher relative to the  $\Upsilon(1S)$  state than the  $D\bar{D}$  threshold with respect to the  $J/\psi$ .

Another complicating circumstance is that none of the experimentally observed vector  $b\bar{b}$  mesons have been positively identified as  $^3D_1$  states, contrary to the situation in charmonium. This makes definite conclusions about level splittings very problematic. Finally, there are compelling indications that the  $\Upsilon(10580)$  is not the  $\Upsilon(4S)$  state, as is generally assumed.

In this talk I shall review an empirical modelling of vector  $b\bar{b}$  resonances above the open-bottom threshold, including the  $\Upsilon(10580)$ , based on the Resonance-Spectrum-Expansion production formalism. Furthermore, an analysis of other experimental bottomonium data will be presented, showing strong indications of the two lowest and so far unlisted  $^3D_1$  states below the  $B\bar{B}$  threshold.

**Primary authors:** Prof. VAN BEVEREN, Eef (University of Coimbra, Portugal); RUPP, George (CeFEMA/IST, University of Lisbon)

**Presenters:** RUPP, George (IST); RUPP, George (CeFEMA/IST, University of Lisbon)