

## Whether discovering the new particle $Y(4140)$ in Fermilab is confirming the correctness of the Subquark Model?

Mesons  $B$  in the Subquark Model have the fullerene structure as regular icosahedrons with 30 bonds, surrounded with truncated icosahedrons, that is 32 -faces with 90 bonds (they are corresponding to the structure of fullerene C60). Such structures of layered fullerenes are being called nanobulbs. The total amount of strong bonds (between biquarks) would equal 120, what in dividing bonds would give:  $64Ba + 56Bs \approx 5\,274$  [MeV]. The remaining remainder of mass are creating strong-lepton bonds (bonds between biquarks and leptons and between very leptons inside the structure of this meson)<sup>1</sup>.

According to the newest news reports from Fermilab<sup>2</sup> the  $B^+$  meson sometimes disintegrates anew discovered particle  $Y(4140)$  and meson  $K^+$ :

$B^+$  disintegrates into:

$$Y(4140) + K^+$$

and next  $Y(4140)$  into:  $J/\psi + \varphi$

$$J/\psi \text{ into: } \mu^+ + \mu^-$$















$$\varphi \text{ into: } K^+ + K^-$$

Particles  $Y(4140)$  can be fullerenes 60 (truncated icosahedrons), that is 32 -faces with 90 bonds (60 biquarks). In the  $B^+$  meson is disintegrating the internal fullerene - regular icosahedron with 30 bonds and  $K^+$  is coming into existence (the cube or the hexagonal prism). External fullerene 60 forms the particle  $Y(4140)$ . Expected number of strong bonds of the particle  $Y(4140)$  is equal:  $48Ba + 42Bs \approx 3\,956$  [MeV]. Lepton bonds would create remaining missing mass. Details are shown in the undermentioned table. Number of lepton bonds can slightly differ from described in the table, different variants of the particle  $Y(4140)$  can be formed giving as a result different its decays.

<sup>1</sup> Ampel Leszek, *B. Detailed model – Subquark structure of matter*, (2009), <http://all-subquarks.eu/>

<sup>2</sup> Source: Fermilab <http://www.fnal.gov/>, „Particle oddball surprises CDF physicists”, (03.18.2009) [http://www.fnal.gov/pub/presspass/press\\_releases/Y-particle-20090318.html](http://www.fnal.gov/pub/presspass/press_releases/Y-particle-20090318.html)

**Table 1. Calculated mass and the structure of particles  $Y(4140)$**

	<b>bond</b>	<b>number of bonds <math>B^+</math></b>	<b>number of bonds <math>K^+</math></b>	<b>number of bonds <math>Y(4140)</math></b>
	<b>structure =&gt;</b>	regular icosahedrons surrounded with fullerene60	<b>v.1 / v.4 cube / hexagonal prism</b>	fullerene 60
	 $E_{Ba}$	64	<b>4 / .</b>	48
	 $E_{Bs}$	56	<b>4 / 6</b>	42
	 $E_{e-e}$	?		4
	 $E_{e-e}$	?		2
	 $E_{e-v}$			
	 $E_{e-v}$	?	<b>1 / 3</b>	4
	 $E_{e-g}$	?	<b>1 / 3</b>	8
	 $E_{e-g}$	?	<b>1 / 3</b>	8
	 $E_{e-b}$	?	<b>. / 3</b>	
	 $E_{e-b}$	?	<b>. / 3</b>	4
	 $E_{v-b}$		<b>1 / .</b>	
	 $E_{v-b}$	?	<b>1 / 3</b>	4
	 $E_{g-b}$	?	<b>4 / 3</b>	4
	 $E_{g-b}$	?	<b>6 / 12</b>	4
<b>summary</b>		<b>5274.29</b>	<b>494.09 / 493.65</b>	<b>4143.0002</b>
$m_{exp}$	[source] <sup>3</sup>	5279.15(31)	493.677(16)	[Fermilab] <sup>2</sup> 4143.0(2.9)
$\Delta E_m$		4.86	<b>-0.42 / -0.02</b>	-0.0002

Calculations of mass of the particle  $Y(4140)$  for different amounts of its internal bonds it is possible to make with „Mass Calculator“:

<http://all-subquarks.eu/ALfiles/CalcMass.html> .

<sup>3</sup> C. Amsler *et al.*, Physics Letters **B667**, 1 (2008) Cut-off date for this update was January 15, 2008. <http://pdglive.lbl.gov>