Folding a pattern

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Abstract

We propose a reorganisation of the standard model and their mesons in order to build supersymmetric multiplets. The presentation is open to improvements to choose the adequate candidates in each recombination.

I have told elsewhere how a chain of four Koide equations does a good work to predict SM mass. Gray cells are inputs All triplets in sequence meet Koide equation. For (bcs), sign of $\sqrt{m_s}$ is minus, so in the exact case it is orthogonal to $(e\mu\tau)$:

	pdg 2012	exact	rotated
t	173.5 ± 1.0	174.10	173.26
b	4.18 ± 0.03	3.64	4.197
c	1.275 ± 0.025	1.698	1.359
τ	1.77682(16)	1.698	1.776968
s	95 ± 5	121.95	92.275
μ	105.65837	121.95	105.6584
d	~ 4.8	8.75	5.32
u	~ 2.3	0	.03564
e	0.5109989	0	.5109989

Lets exploit this identification of some levels to try to fold them into a susy-like configuration.

First step, the SM as it is. For each QCD string, consider its fundamental state.

$$
\begin{array}{llllll}
 & \nu_1, t_{rgb} & & & & \\
 & \nu_2, b_{rgb} & B^+, B_c^+ & bu, bc & bb, bs, bd & \eta_b, B^0, B_c^0, \bar{B}^0, \bar{B}_c^0 \\
\overset{\bar{c}\bar{c}}{cc}, \overset{\bar{c}\bar{u}}{cu} & \tau, c_{rgb} & D^+, D_s^+ & sc, dc & & \eta_c, D^0, \bar{D}^0 \\
\overset{\bar{u}\bar{u}}{uu} & \mu, s_{rgb} & \pi^+, K^+ & su, du & ss, sd, dd & \eta_8, \pi^0, K^0, \bar{K}^0 \\
 & \nu_3, d_{rgb} & & & & \\
 & e, u_{rgb} & & & &
\end{array}
$$

For charged particles, the antiparticle is in the same level. I ommit the "+ antiparticle" remark

Now, second step, we fold t and u

$$
\begin{array}{llllll}
 & \nu_2, b_{rgb}, e, u_{rgb} & B^+, B_c^+ & bu, bc & bb, bs, bd & \eta_b, B^0, B_c^0, \bar{B}^0, \bar{B}_c^0 \\
\overset{\bar{c}\bar{c}}{cc}, \overset{\bar{c}\bar{u}}{cu} & \tau, c_{rgb} & D^+, D_s^+ & sc, dc & & \eta_c, D^0, \bar{D}^0 \\
\overset{\bar{u}\bar{u}}{uu} & \mu, s_{rgb}, \nu_1, t_{rgb} & \pi^+, K^+ & su, du & ss, sd, dd & \eta_8, \pi^0, K^0, \bar{K}^0 \\
 & \nu_3, d_{rgb} & & & &
\end{array}
$$

Next steps are arbitrary, we could fold any combination of up-like quarks

$$
\begin{array}{llllll}
 & \nu_2, b_{rgb}, e, u_{rgb} & B^+, B_c^+ & bu, bc & bs, bd & \eta_b, B^0, B_c^0, \bar{B}^0, \bar{B}_c^0 \\
\overset{\bar{c}\bar{c}}{cc}, \overset{\bar{c}\bar{u}}{cu} & \tau, c_{rgb}, \nu_3, d_{rgb} & D^+, D_s^+ & sc, dc & bb, dd & \eta_c, D^0, \bar{D}^0 \\
\overset{\bar{u}\bar{u}}{uu} & \mu, s_{rgb}, \nu_1, t_{rgb} & \pi^+, K^+ & su, du & ss, sd & \eta_8, \pi^0, K^0, \bar{K}^0
\end{array}
$$

And last, and even more arbitrary, is to decide which neutral meson to fold into the intermediate level. Just choose one

$$
\begin{array}{llllll}
 & \nu_2, b_{rgb}, e, u_{rgb} & B^+, B_c^+ & bu, bc & bs, bd & B^0, B_c^0, \bar{B}^0, \bar{B}_c^0 \\
\overset{\bar{c}\bar{c}}{cc}, \overset{\bar{c}\bar{u}}{cu} & \tau, c_{rgb}, \nu_3, d_{rgb} & D^+, D_s^+ & sc, dc & bb, dd & \eta_b, \eta_c, D^0, \bar{D}^0 \\
\overset{\bar{u}\bar{u}}{uu} & \mu, s_{rgb}, \nu_1, t_{rgb} & \pi^+, K^+ & su, du & ss, sd & \eta_8, \pi^0, K^0, \bar{K}^0
\end{array}
$$

The $\pm 4/3$ diquarks, at last, I guess they are related to electroweak symmetry breaking via some condensation. They could stay as there are, or perhaps the charm should be at an upper level

$$
\begin{array}{llllll}
\overset{\bar{c}\bar{c}}{cc} & \nu_2, b_{rgb}, e, u_{rgb} & B^+, B_c^+ & bu, bc & bs, bd & B^0, B_c^0, \bar{B}^0, \bar{B}_c^0 \\
\overset{\bar{c}\bar{u}}{cu} & \tau, c_{rgb}, \nu_3, d_{rgb} & D^+, D_s^+ & sc, dc & bb, dd & \eta_b, \eta_c, D^0, \bar{D}^0 \\
\overset{\bar{u}\bar{u}}{uu} & \mu, s_{rgb}, \nu_1, t_{rgb} & \pi^+, K^+ & su, du & ss, sd & \eta_8, \pi^0, K^0, \bar{K}^0
\end{array}
$$

It could be. Probably all the ambiguities in the above folding, including this last one, are related.

Final, let me prettify it by adding the antiparticles. Note that we have the required quantity of bosons for three generations of the SM, but that the not-SM charged bosons (the uu etc) can not be arranged in a pattern of three generations of Dirac particles; it is because of it that we can guess they have a different role that being a plain sfermion.

$$
\begin{array}{||c|l|llll||}
\hline
\overset{\bar{c}\bar{c}}{cc} & \nu_2, b_{rgb}, e, u_{rgb} & B^+, B_c^+ & \overset{\bar{b}\bar{u}}{bu}, \overset{\bar{b}\bar{c}}{bc} & \overset{\bar{b}\bar{s}}{bs}, \overset{\bar{b}\bar{s}}{bd} & B^0, B_c^0, \bar{B}^0, \bar{B}_c^0 \\
\overset{\bar{c}\bar{u}}{cu} & \tau, c_{rgb}, \nu_3, d_{rgb} & D^+, D_s^+ & \overset{\bar{s}\bar{c}}{sc}, \overset{\bar{d}\bar{c}}{dc} & \overset{\bar{b}\bar{b}}{bb}, \overset{\bar{d}\bar{d}}{dd} & \eta_b, \eta_c, D^0, \bar{D}^0 \\
\overset{\bar{u}\bar{u}}{uu} & \mu, s_{rgb}, \nu_1, t_{rgb} & \pi^+, K^+ & \overset{\bar{s}\bar{u}}{su}, \overset{\bar{d}\bar{u}}{du} & \overset{\bar{s}\bar{s}}{ss}, \overset{\bar{s}\bar{d}}{sd} & \eta_8, \pi^0, K^0, \bar{K}^0 \\
\hline
\end{array}
$$