SAIP 2019 proceedings revisions: *The ubiquitous pseudo-scalar in composite Higgs models*
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1. References
The authors added the reference Ferretti (arXiv:1604.06467), and Ferretti-Karateev (arXiv:1312.5330). The references were modified to reflect that Ferretti-Karateev (arXiv:1312.5330) and Barnard-Gherghetta-Ray (2014) gave the first classification of the models, that Cacciapaglia (2014,2017,2019) expands on phenomenology of the pseudo-scalar, and that Belyaev (2016) contains the most complete theoretical description of the pseudo-scalar.

2. The author changed "These models, which notably do not include fundamental scalars, are considered for the reason that they may provide a UV-complete theory" to " These models, which notably include fundamental fermions rather than scalars, are considered for the reason that they may be built upon to provide a UV-complete theory".
3. Replaced reference with Ferretti-Karateev.

4. Modified to $SU(N_f) \times SU(N_f)$, and added the breaking pattern in the complex case from one of the referee's suggested references (Ferretti arXiv:1604.06467). Added $SU(4) \times SU(4) \to SU(4)$.

5. In correcting the statement and removing redundant information, these paragraphs have been changed **from**

In a CH model we expect a low energy spectrum which includes, as the name indicates, a Higgs boson which is expected to be composite. This is accompanied by exotic composite scalars, some of which are ubiquitous to all CH models. All models contain at least two species of underlying fermions, χ and ψ, belonging to different irreducible representations of the confining hypercolour group. During the breaking of the global symmetry we may have the electroweak coset ($\psi\psi$ condensate), the QCD coset ($\chi\chi$ condensate) and two $U(1)$ singlets, a and η' . These singlets, associated with the Abelian symmetries $U(1)_{\chi,\psi}$, occur if both species of fermion condense. The two mass eigenstates, a and η', are subject to some mixing, and their masses receive contributions from the masses of the underlying fermions, ψ and χ, and the anomalous $U(1)$ combination [**?**].

The light pNGB, a, is associated to the global $U(1)$ symmetry, and occurs when a single fermion species condenses. It results from the breaking of a non-anomalous $U(1)$ charge by the chiral condensate in the Higgs sector, and will therefore carry electroweak quantum numbers. The pNGB η' expected in addition to the a is a coloured octet, associated to the anomalous $U(1)$ charge, which may arise as a result of the underlying fermions χ which are responsible for the mechanism of partial compositeness. The mechanism of partial compositeness may therefore be indicated by the presence of pNGBs.

to

In a CH model we expect a low energy spectrum which includes, as the name indicates, a Higgs boson which is expected to be composite. This is accompanied by exotic composite scalars, some of which are ubiquitous to all CH models. All models contain at least two species of underlying fermions, χ and ψ, belonging to different irreducible representations of the confining hypercolour group. During the breaking of the global symmetry we may have the formation of the electroweak coset ($\psi\psi$ condensate), the QCD coset ($\chi\chi$ condensate) and two $U(1)$ singlets, a and η'. These singlets, associated with the Abelian symmetries $U(1)_{\chi,\psi}$, occur if both species of fermion condense. The two mass eigenstates, a and η', are then subject to some mixing, and their masses receive contributions from the masses of the underlying fermions, ψ and χ, and the anomalous $U(1)$ combination. The light pNGB a on which we focus is associated to the anomaly-free $U(1)$ symmetry, where the second singlet η', associated to the anomalous $U(1)$.

6. Changed "higher" to "lower"

7. Yes, they are calculated at leading order in QCD. Modified the sentence in Section 3.1 to read
"..where the cross section is plotted in figure 1 for a sample of LHC energies at leading order in QCD".