Structure of dimension-six derivative interactions in pseudo Nambu-Goldstone N Higgs doublet models

arXiv:1111.2120, PRD.85.075021 (2012)

Yohei Kikuta (KEK/Sokendai)

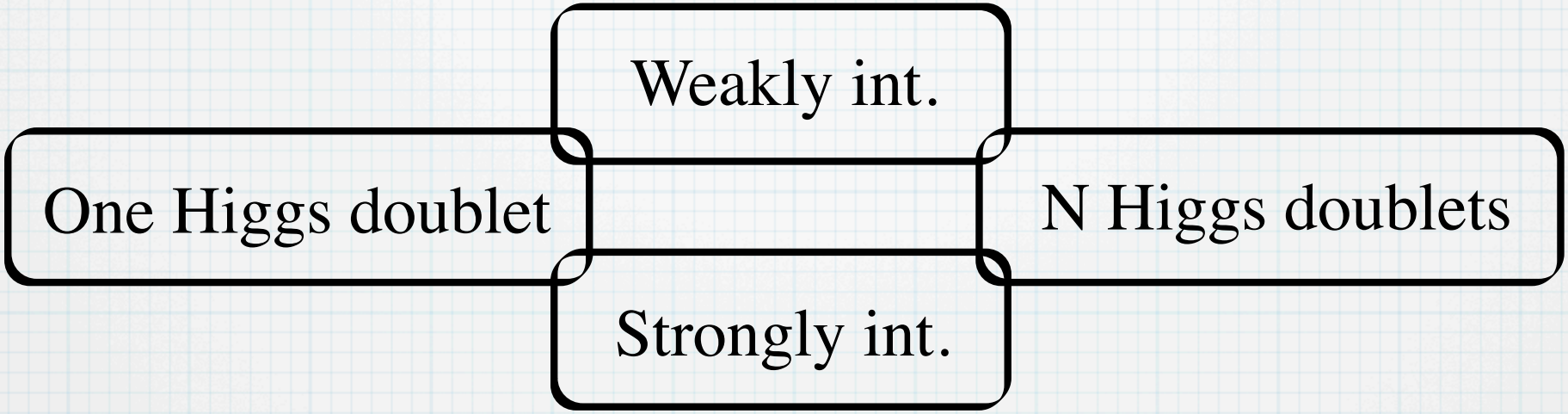
Cargese Summer School 31/08/2012

Collaborators

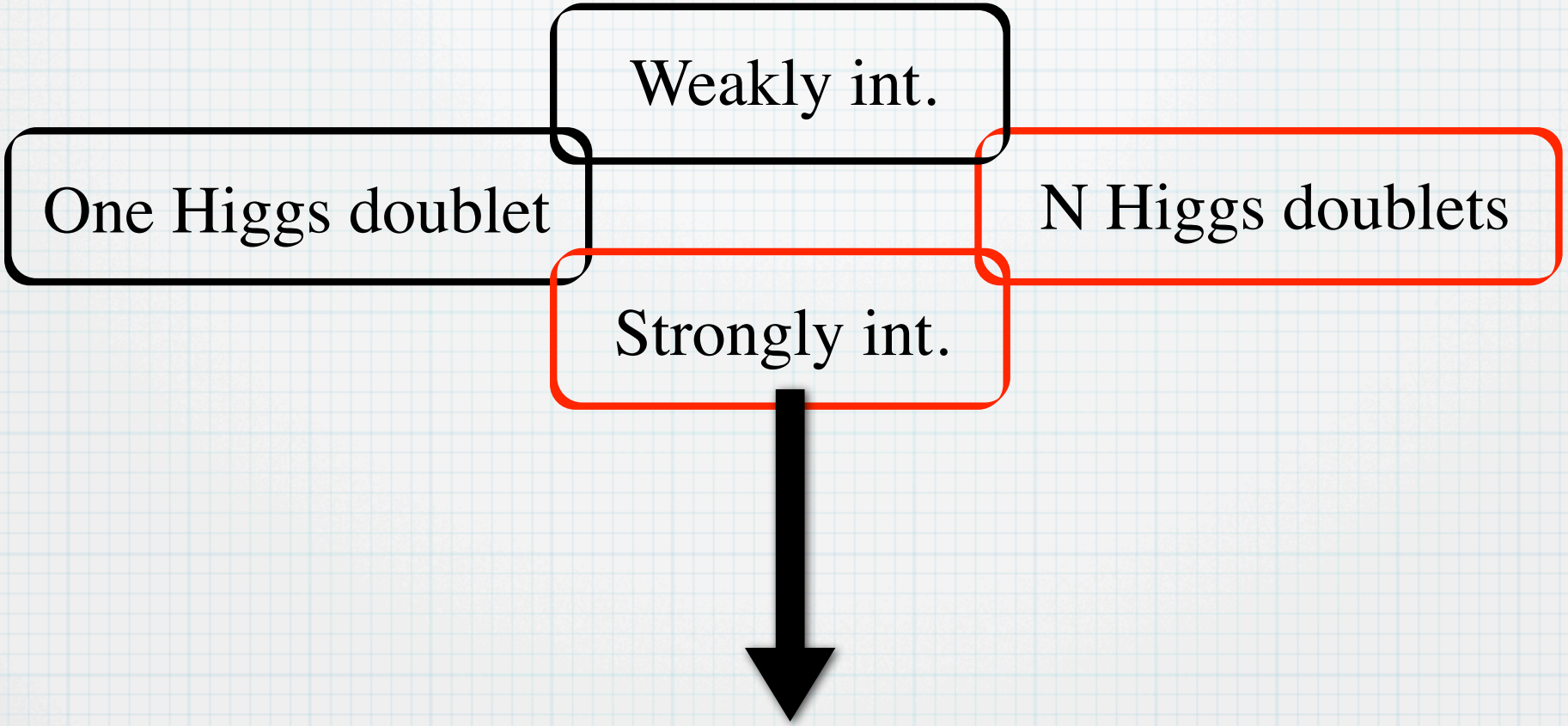
Yasuhiro Okada (KEK/Sokendai)

Yasuhiro Yamamoto (University of Tokyo)

Possibilities of the Higgs sector



Possibilities of the Higgs sector



Higgs doublets arise as pseudo NG fields

Story of our work

Composite (PNG) Higgs

Non-Linear Sigma Model

$$\mathcal{L}_{\mathrm{NL\Sigma M}} = \frac{f^2}{2}\mathrm{Tr}\left[(\partial e^{i\pi/f})(\partial e^{-i\pi/f})\right]$$

Story of our work

Composite (PNG) Higgs

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Non-Linear Sigma Model

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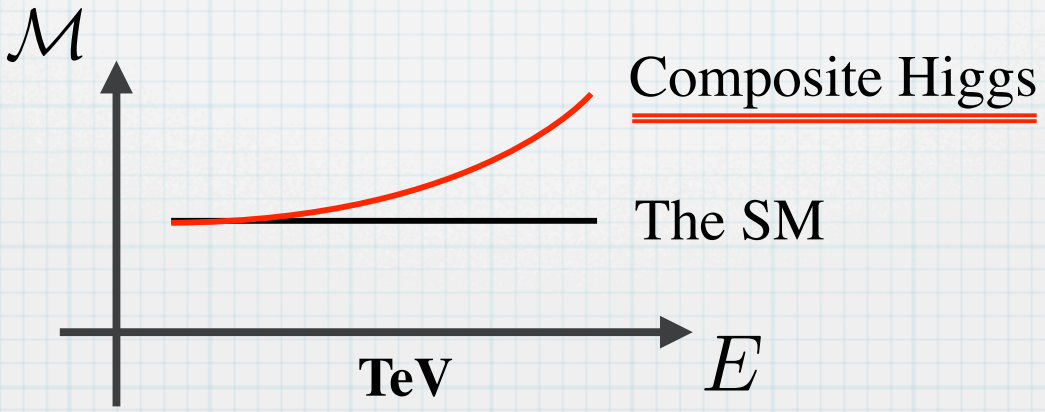
Dim. 6 derivative int.



Story of our work

Composite (PNG) Higgs

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Non-Linear Sigma Model

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Dim. 6 derivative int.

$$\frac{1}{f^2}\mathcal{T}^{abcd}h^a h^b(\partial h^c)(\partial h^d) \qquad a,b,c,d = 1 \sim 4N$$

$\mathcal{T}^{abcd} \sim f^{abX} f^{bdX}$

$$\sim \frac{1}{f^2}\sum (\text{coeff.}) \left(h^a T^{SO(4N)}_{ac}\partial h^c\right)\left(h^b T^{SO(4N)}_{bd}\partial h^d\right)$$

Story of our work

Composite (PNG) Higgs

↓

Non-Linear Sigma Model

↓

Dim. 6 derivative int.

↓

$SU(2)_L \times U(1)_Y$ invariance

† Sum over $SU(2)_L$ & $SU(2)_R$ indices

† Leave only σ^3 of $SU(2)_R$ ↔ $U(1)_Y$

Story of our work

Composite (PNG) Higgs

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Non-Linear Sigma Model

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Dim. 6 derivative int.

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$SU(2)_L \times U(1)_Y$ invariance

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General structure of dim. 6 derivative int.

- Degree Of Freedom
- Cross sections for V_L and Higgs