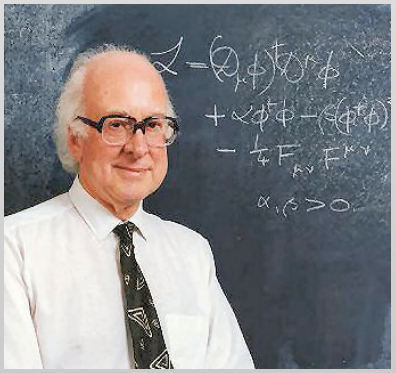
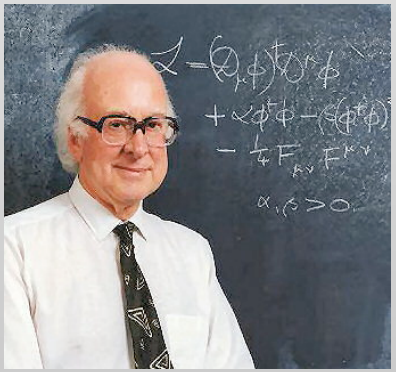
Il **bosone** di **Higgs**



Il **bosone** di ~~**Higgs**~~

Englert-Brout-Higgs-Guralnik-Hagen-Kibble



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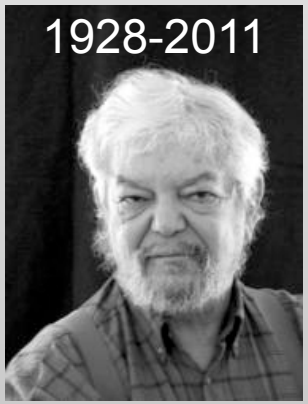
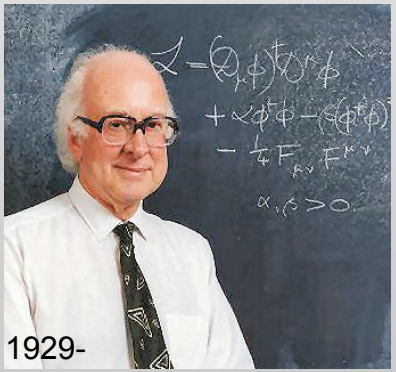
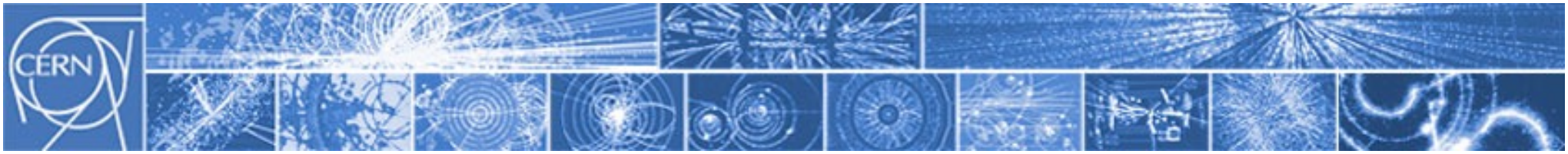
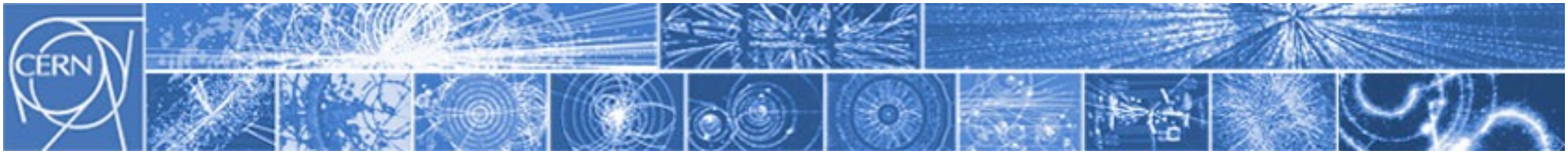






Q. Perché una particella ha massa *m*?



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\begin{aligned}
\mathcal{L} \quad \simeq \quad & -\frac{1}{4} F_{\mu\nu} F^{\mu\nu} \\
& + i \bar{\Psi} \not{D} \Psi \\
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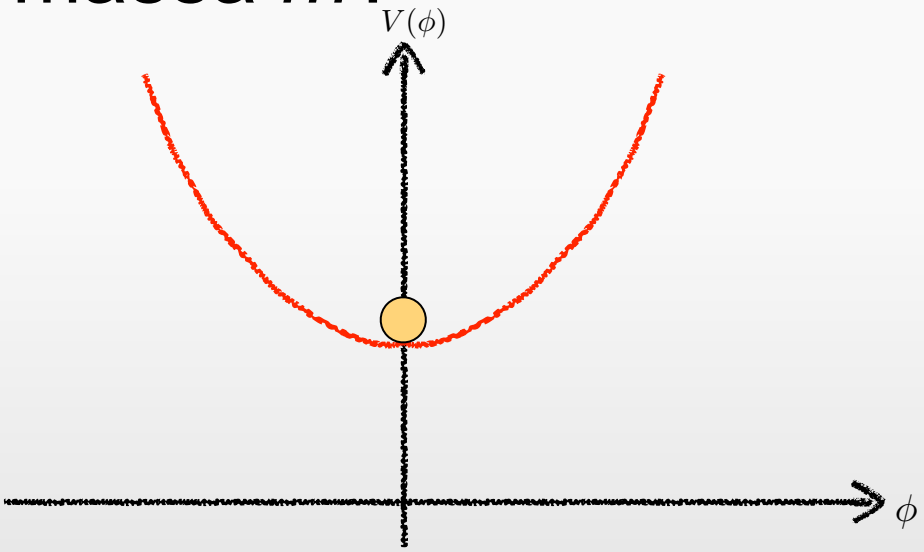

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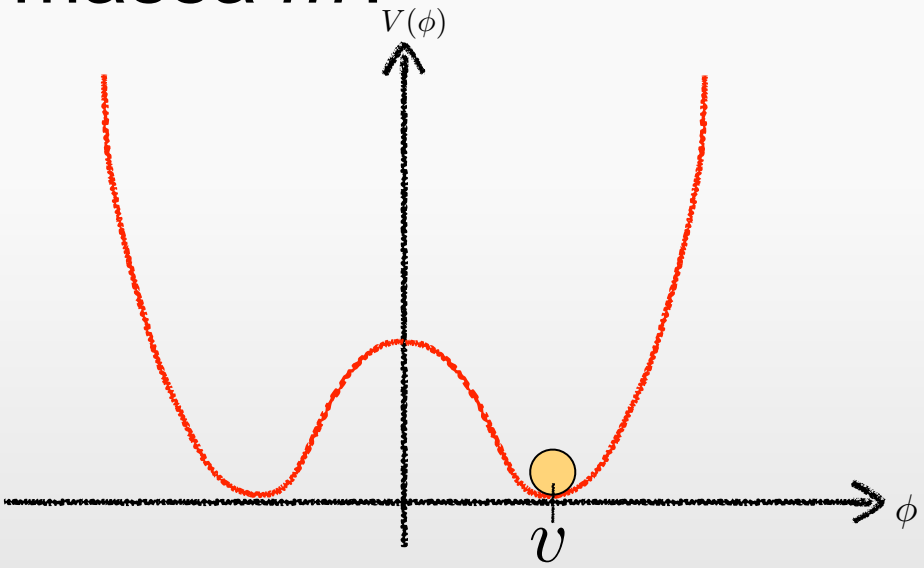

$$\phi \simeq v + h$$

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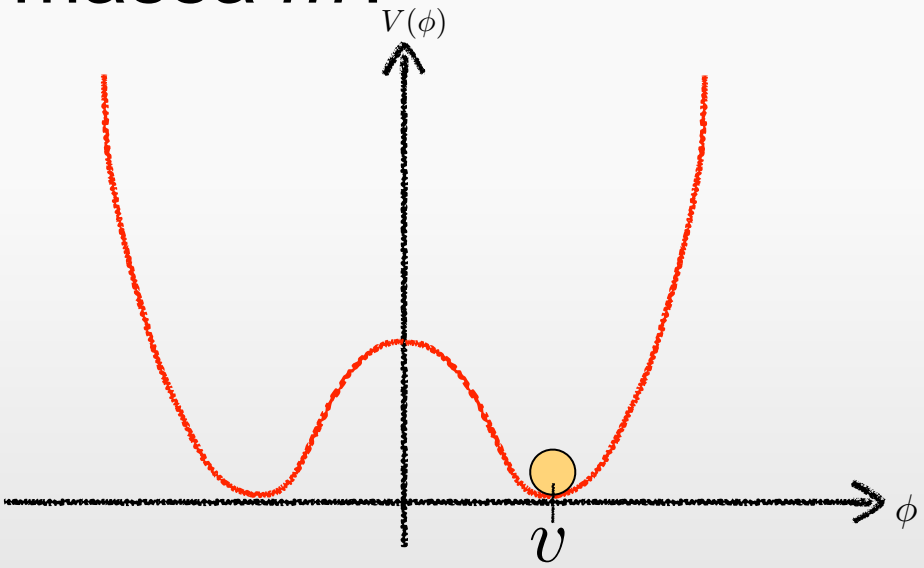

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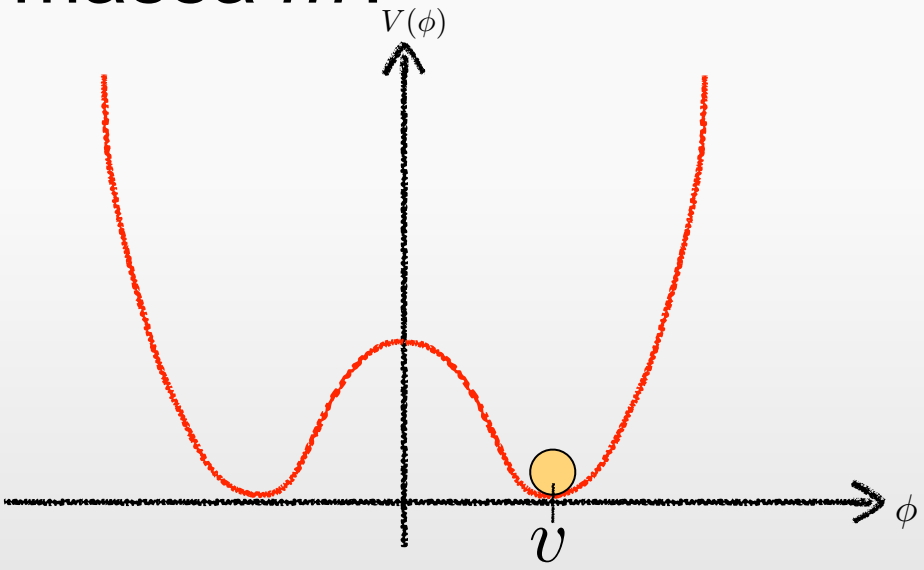

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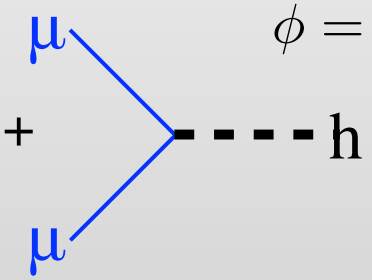

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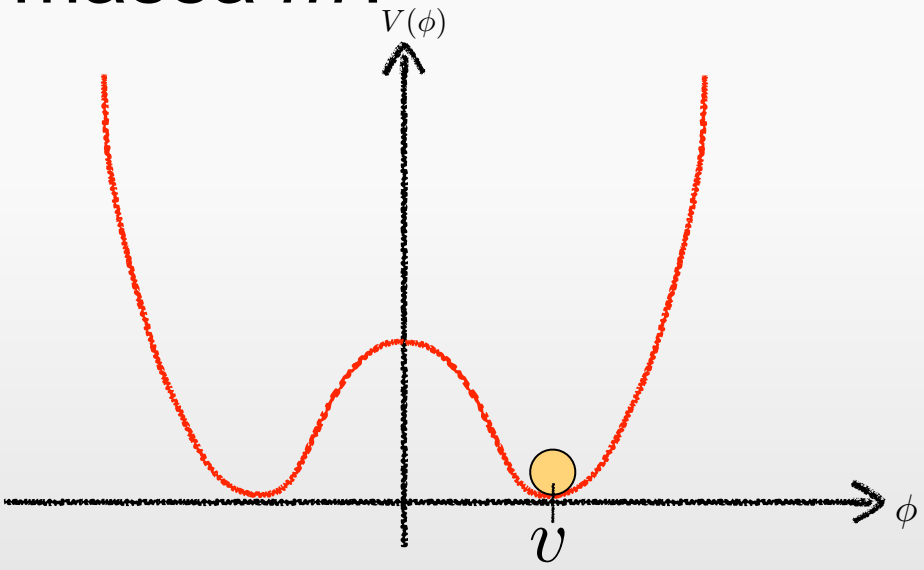

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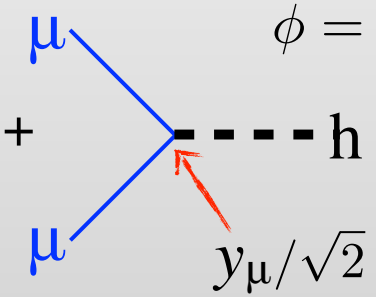
m_μ



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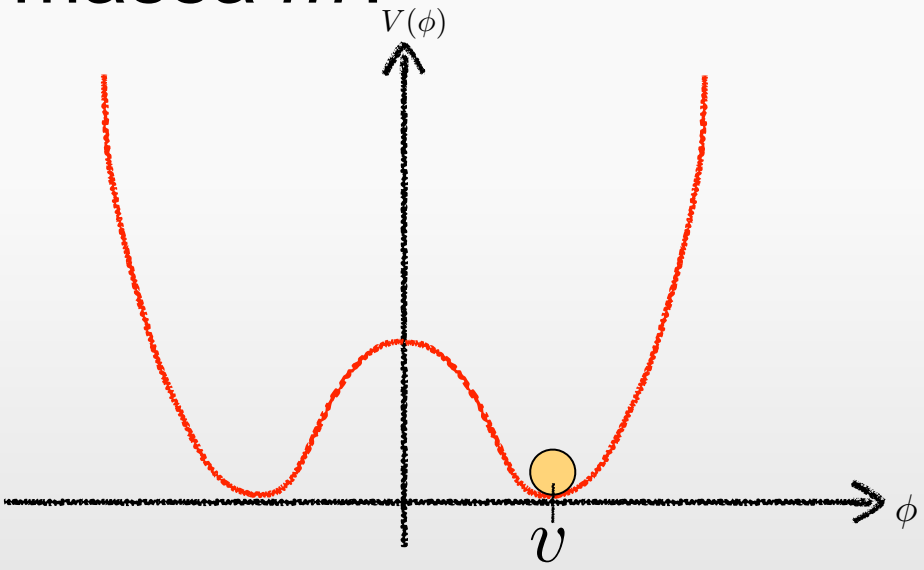

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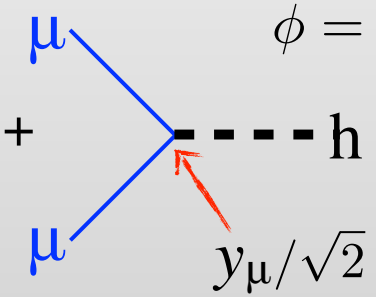

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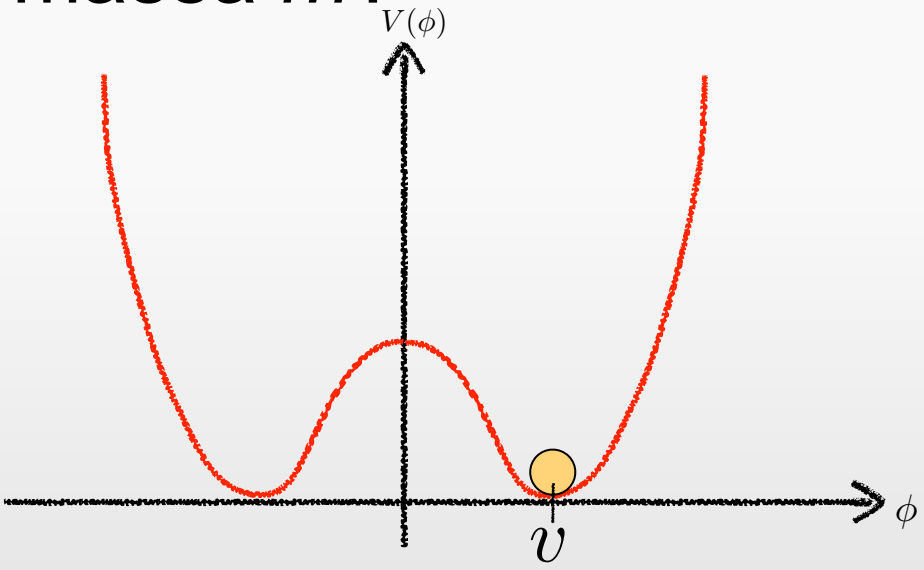

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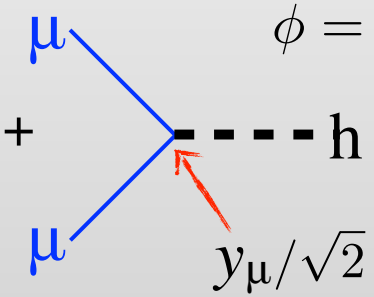

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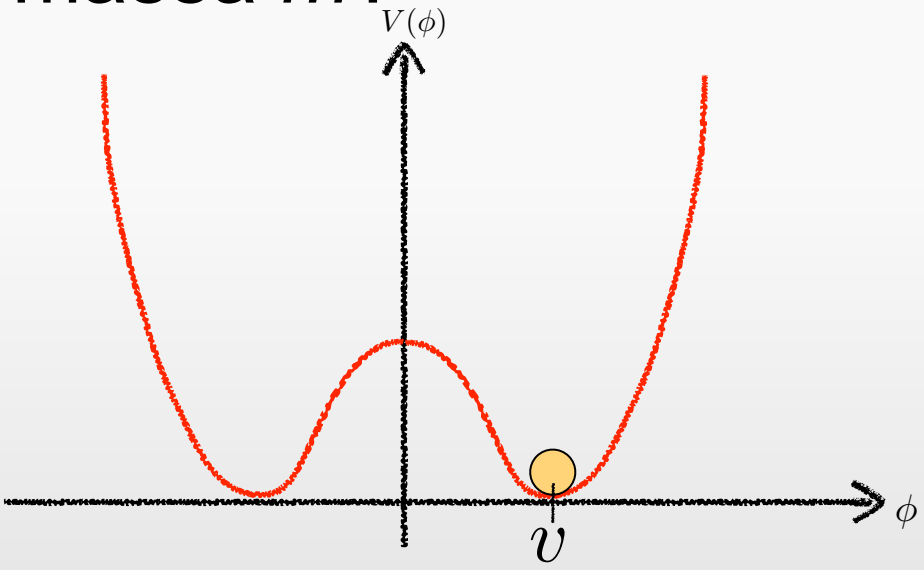

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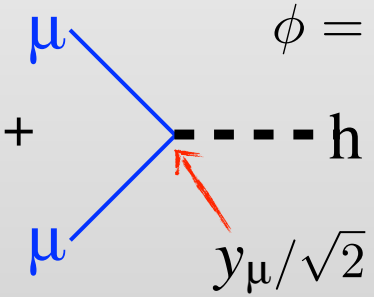
m_μ



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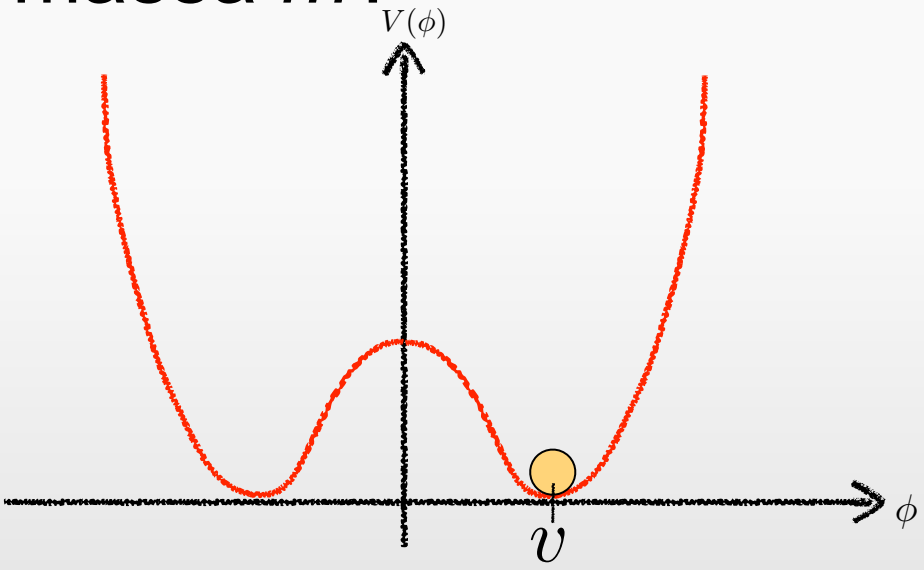

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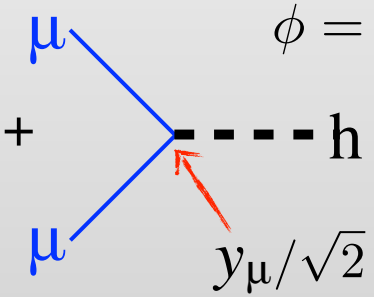

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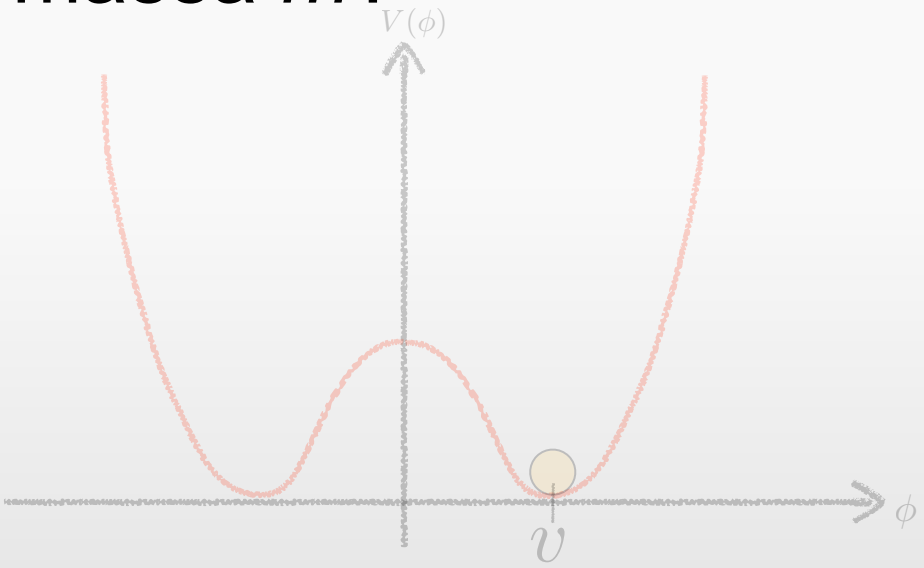

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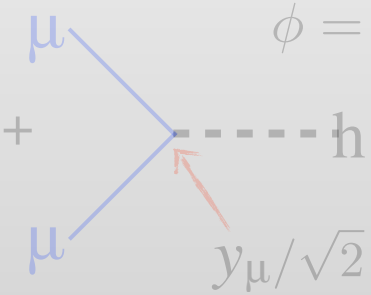

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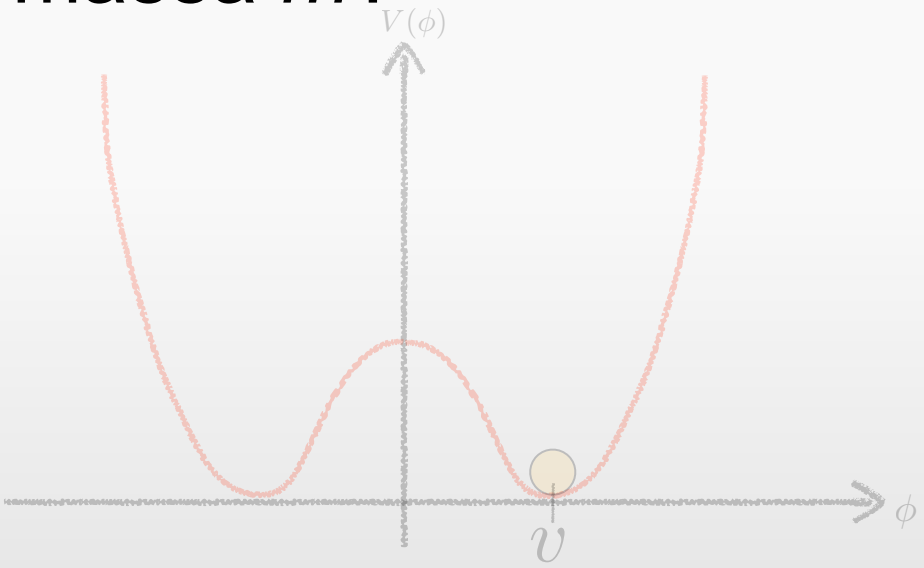

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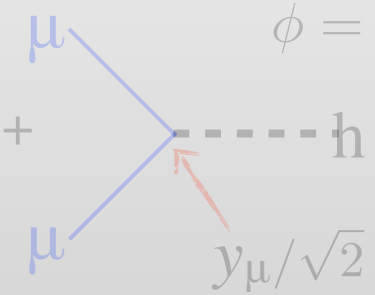

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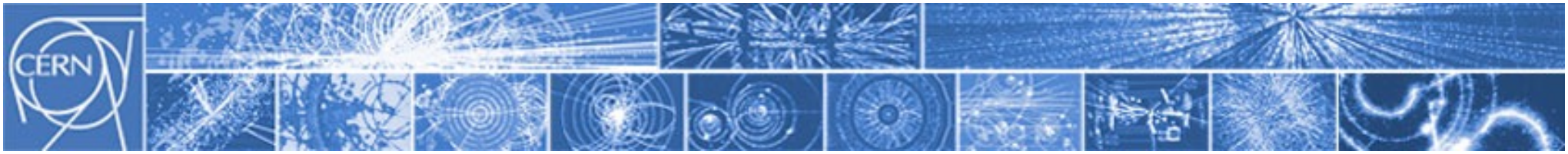
Q. E se il campo scalare non esistesse?



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+M WW⋯ +m μμ ⋯

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$+M\, WW \cdots$ $+m\, \mu\mu \cdots$ → rottura <u>esplicita</u> della simmetria di gauge

Q. P

$\mathcal{L}$ $\quad - \partial_\nu W_\mu$

W

$F_{\mu\nu}$

$i\bar{\Psi}\not{D}$

E s

+M

di gauge

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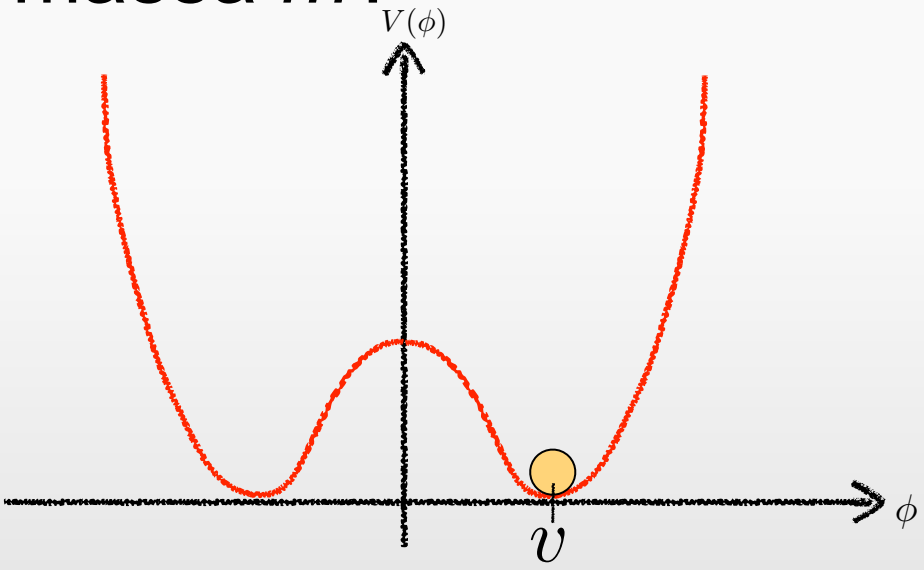

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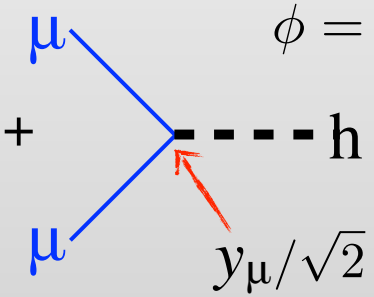

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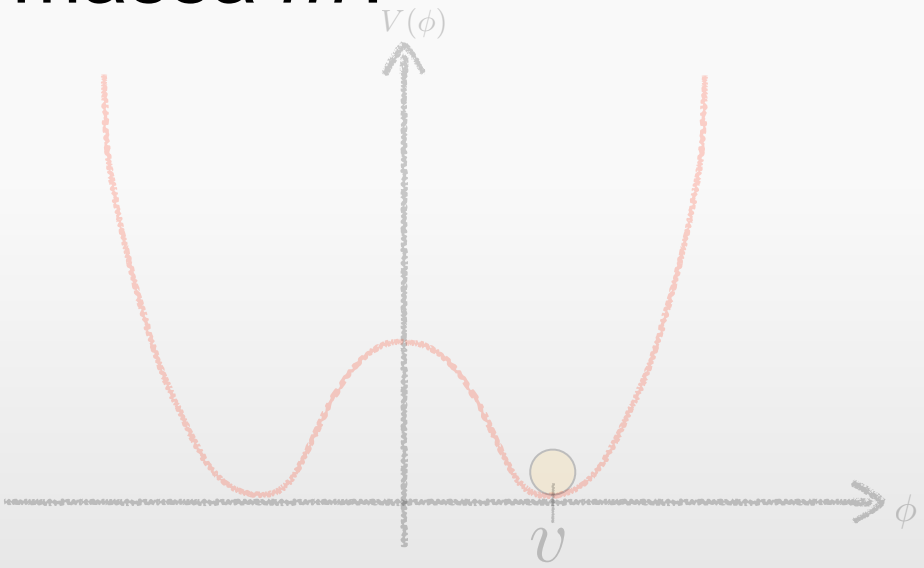

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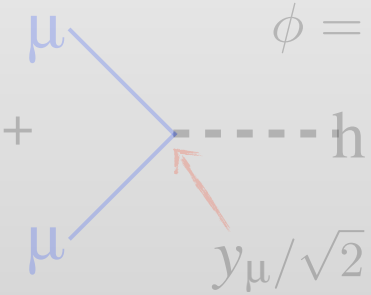

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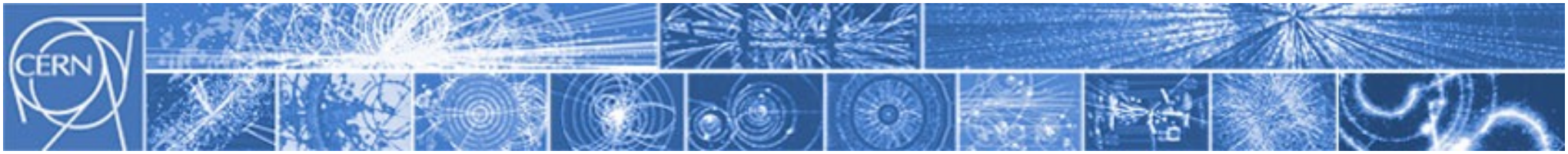

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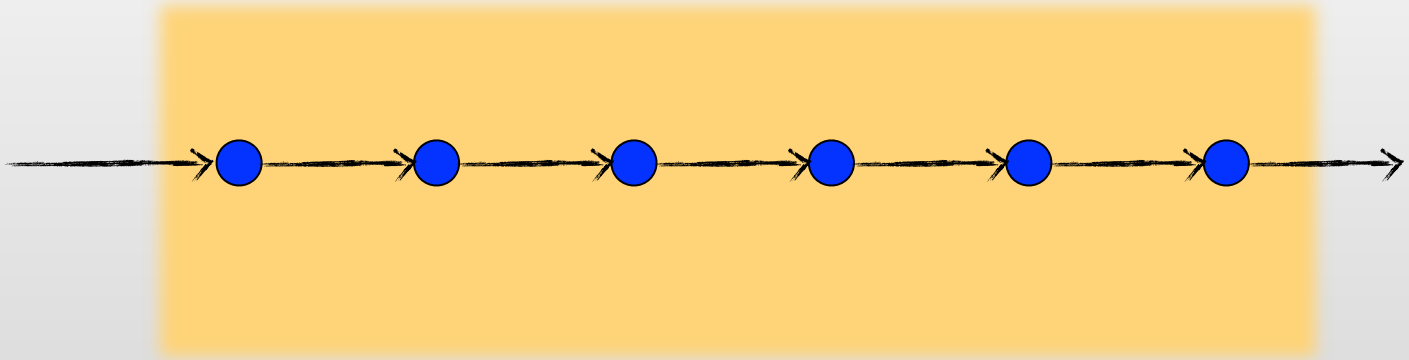
Le particelle, interagendo col campo, acquistano un'inerzia/massa.



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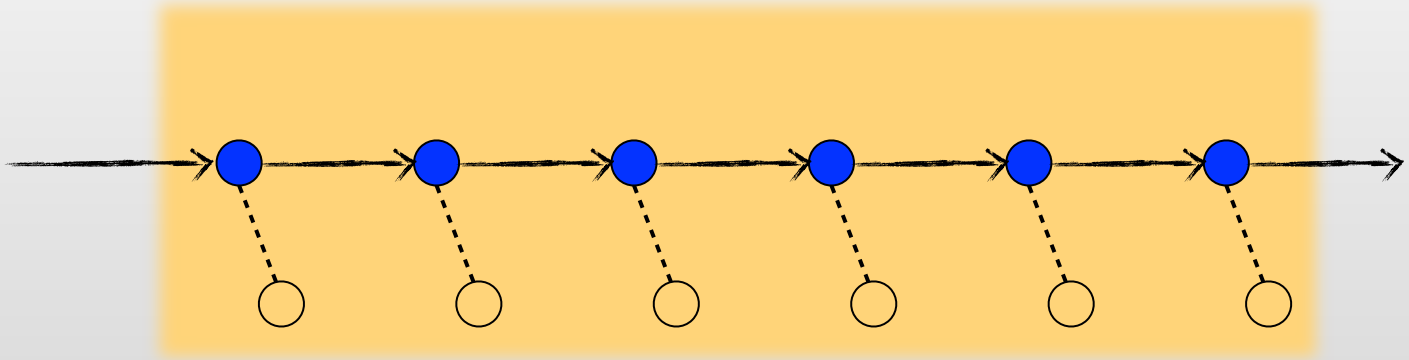

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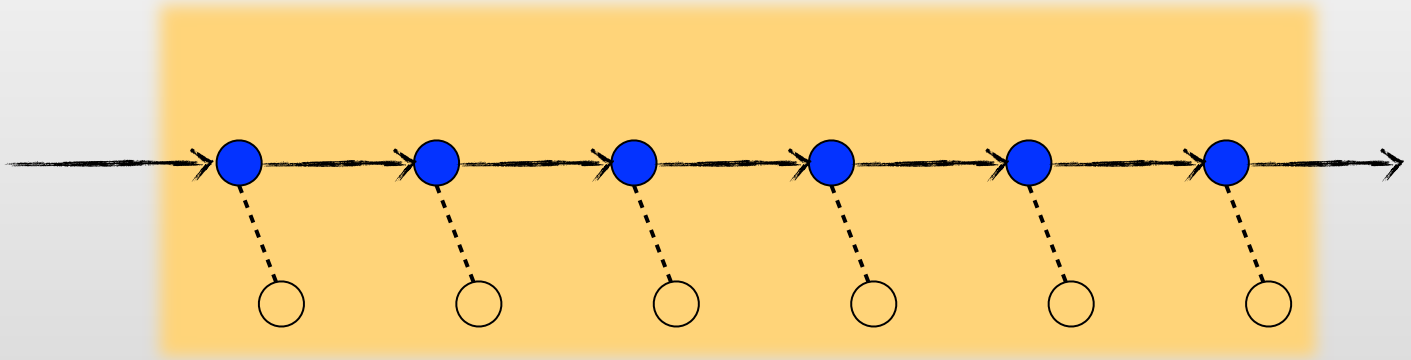

Le 'onde' del *campo* di Higgs sono una *particella*:
la particella di Higgs (bosone).

Equation (2b) describes waves whose quanta have (bare) mass $2\varphi_0\{V''(\varphi_0^2)\}^{1/2}$

VOLUME 13, NUMBER 9 PHYSICAL REVIEW LETTERS 31 AUGUST 1964

BROKEN SYMMETRY AND THE MASS OF GAUGE VECTOR MESONS*

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(Received 26 June 1964)

VOLUME 13, NUMBER 16 PHYSICAL REVIEW LETTERS 19 OCTOBER 1964

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Peter W. Higgs
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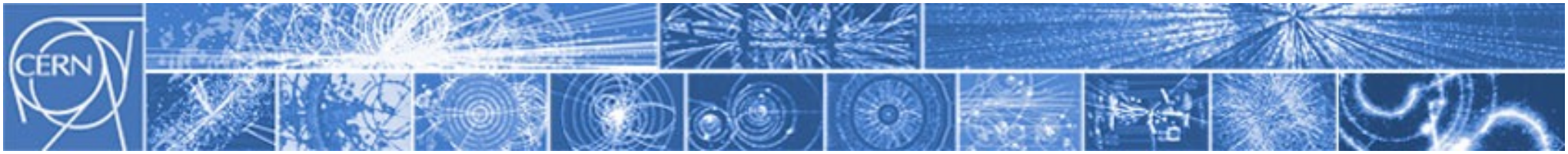

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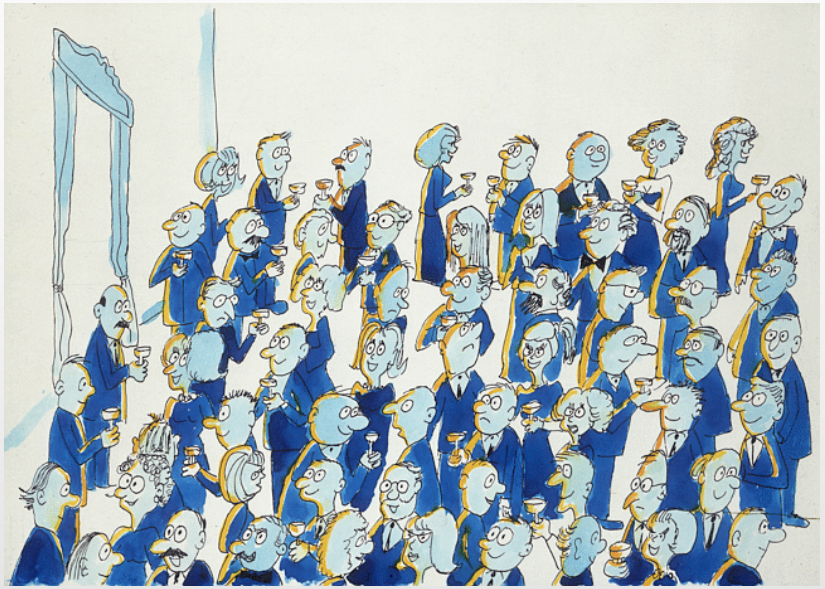

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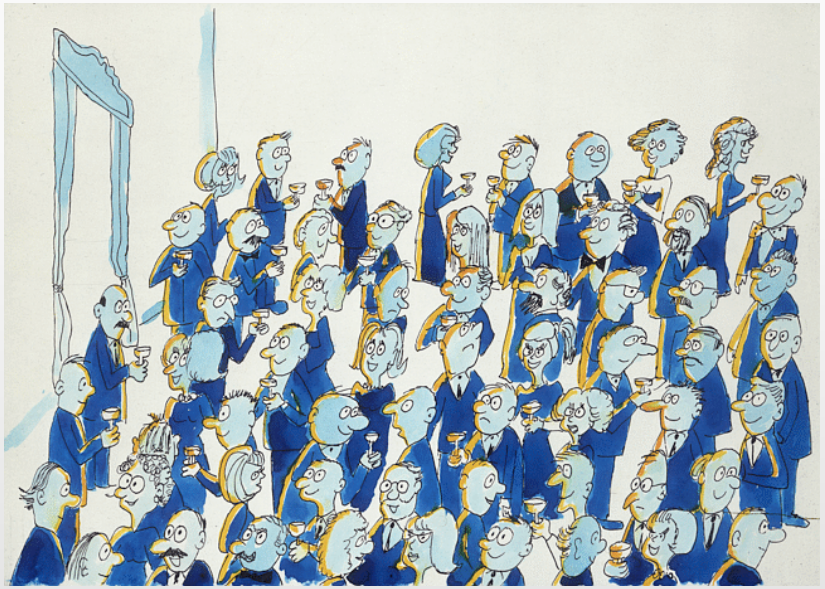

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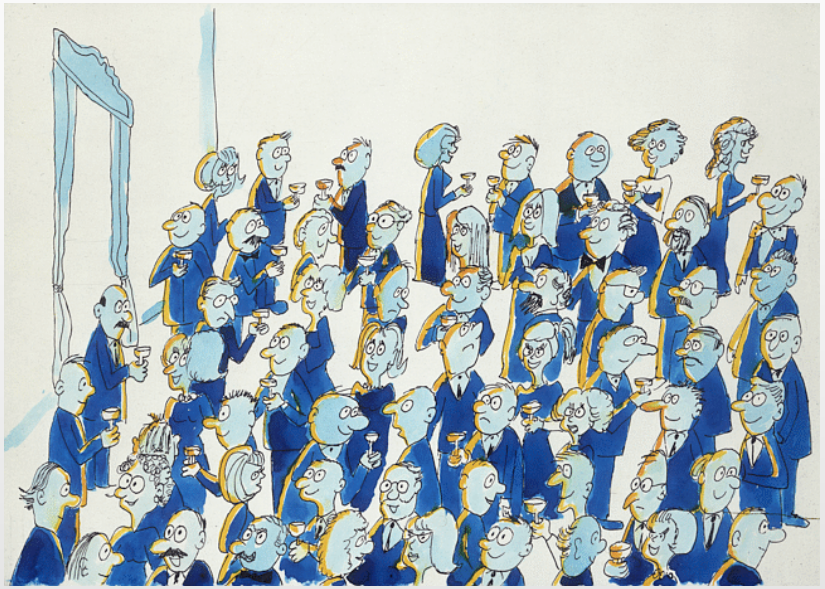

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