

# $B^0 \rightarrow K^* \mu^- \mu^+$ update



Marcin Chrzęszcz  
mchrzasz@cern.ch



University of  
Zurich <sup>UZH</sup>



Universität Zürich,  
Institute of Nuclear Physics, Polish Academy of Science

Zurich meeting, CERN  
September 24, 2014

Neutrinos need a right-handed partner to get their masses like the other SM fermions!

Leptons and quarks get their mass through the Yukawa interaction:

$$\mathcal{L} = m \psi_L^\dagger h \psi_R + c.c.$$

# A short introduction to the $\nu$ MSM

Neutrinos need a right-handed partner to get their masses like the other SM fermions!

Leptons and quarks get their mass through the Yukawa interaction:

$\mathcal{L} = m \psi_L^\dagger h \psi_R$  (sterile neutrinos). They would be  $SU(2)$  singlets, as they are still unobserved.

$$\mathcal{L} = \mathcal{L}_{SM} \bar{N}_i i \not{\partial} N_i - f_{i\alpha} H \bar{N}_i L_\alpha - \frac{M_i}{2} \bar{N}_i^c N_i + h.c.$$

Sterile neutrinos would mix to  $\nu_{e,\mu,\tau}$  with very small couplings  $U_{e,\mu,\tau}^2$ .

