

# Diluting SUSY flavour problem on the Landscape

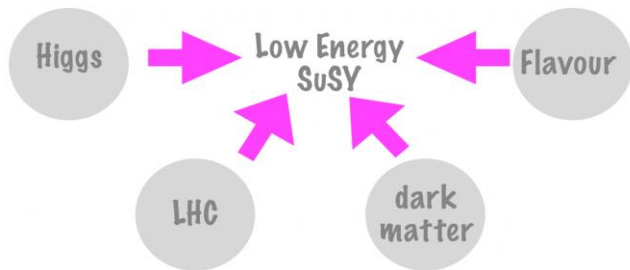
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In collaboration with Emilian Dudas and Sudhir K Vempati

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and beyond  
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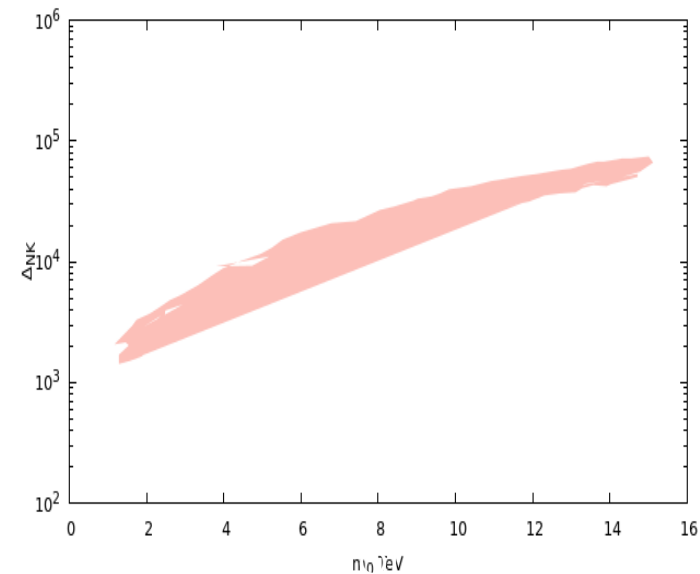
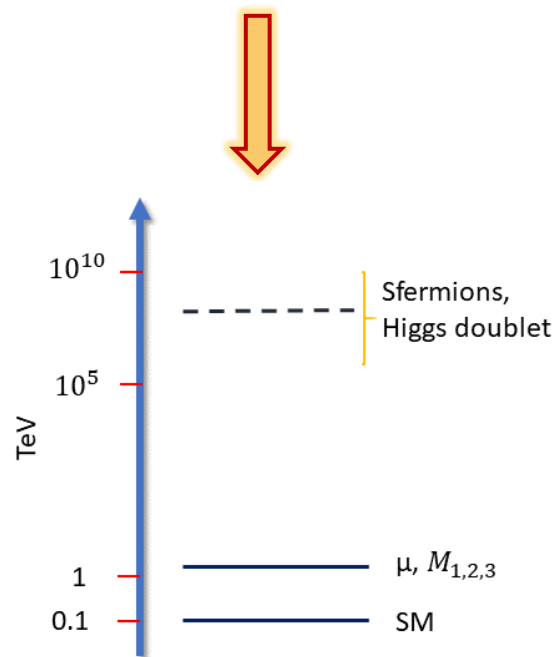
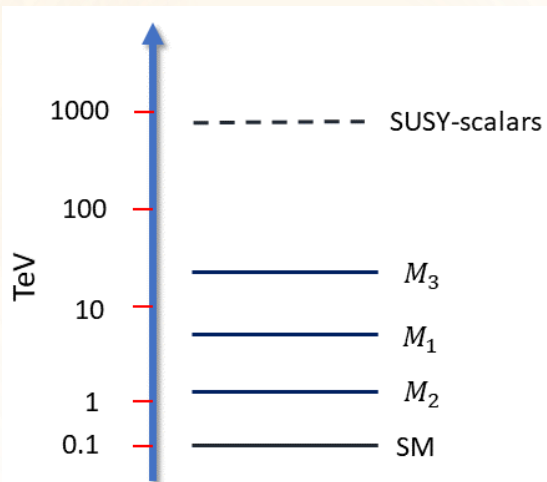


# Motivation

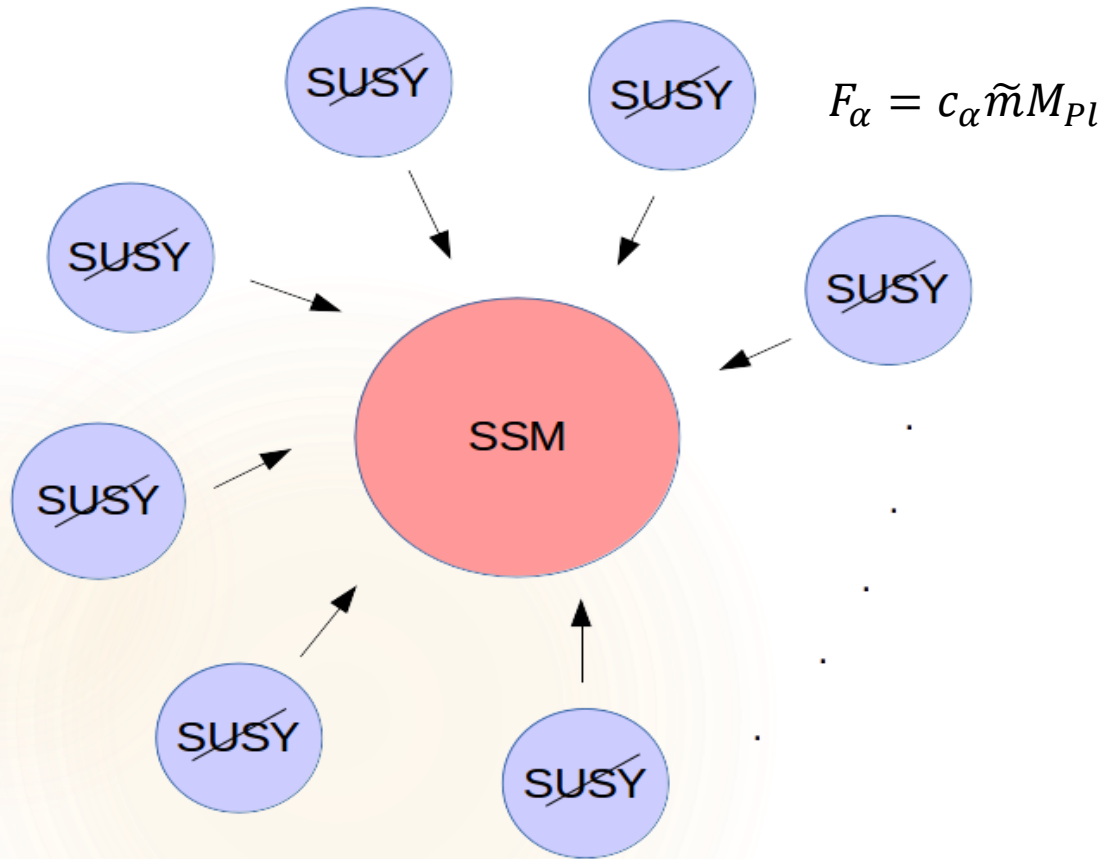


	$\tilde{q}_{1,2}$	$\tilde{l}_{1,2}$	$\tilde{\tau}$	$\tilde{t}$	$\tilde{b}$	$\tilde{g}$	$\tilde{W}$	$\tilde{B}$	$\tilde{H}$
Higgs	X	X	X	> 1	X	X	X	X	X
DM	X	X	> .2	X	X	X	< 2.3	< 0.15	< 1
Flavor	50-60	100	X	X	X	X	X	X	X
LHC	> 1.8	> 0.4	> .4	> 1.2	> 1.2	> 2.2	> .65	> .06	> 0.3

Hints for Spectra



# Set-up of multi-hidden sectors



Soft masses in case of SSM couple to N=1 Supergravity

$$(m_0^2)_{i\bar{j}} = m_{3/2}^2 \delta_{i\bar{j}} + \tilde{m}^2 \sum_\alpha d_{\alpha,i\bar{j}} c_\alpha^2$$

$$M_{1/2}^a = \tilde{m} \sum_\alpha s_\alpha^a c_\alpha;$$

$$A_{ijk} = m_{3/2} y_{ijk} + \tilde{m} \sum_\alpha a_{\alpha,ijk} c_\alpha$$

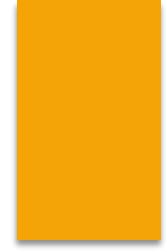
Where  $m_{3/2} = \tilde{m}(g_0 + \sum_\alpha g_\alpha c_\alpha)$ ;

$$(\delta_{ij})_{LL/RR} = \frac{\delta m_0^2}{m_0^2} \cong \frac{1}{\sqrt{N}} \sqrt{\frac{1}{5} (4 + 27d_0^2)},$$

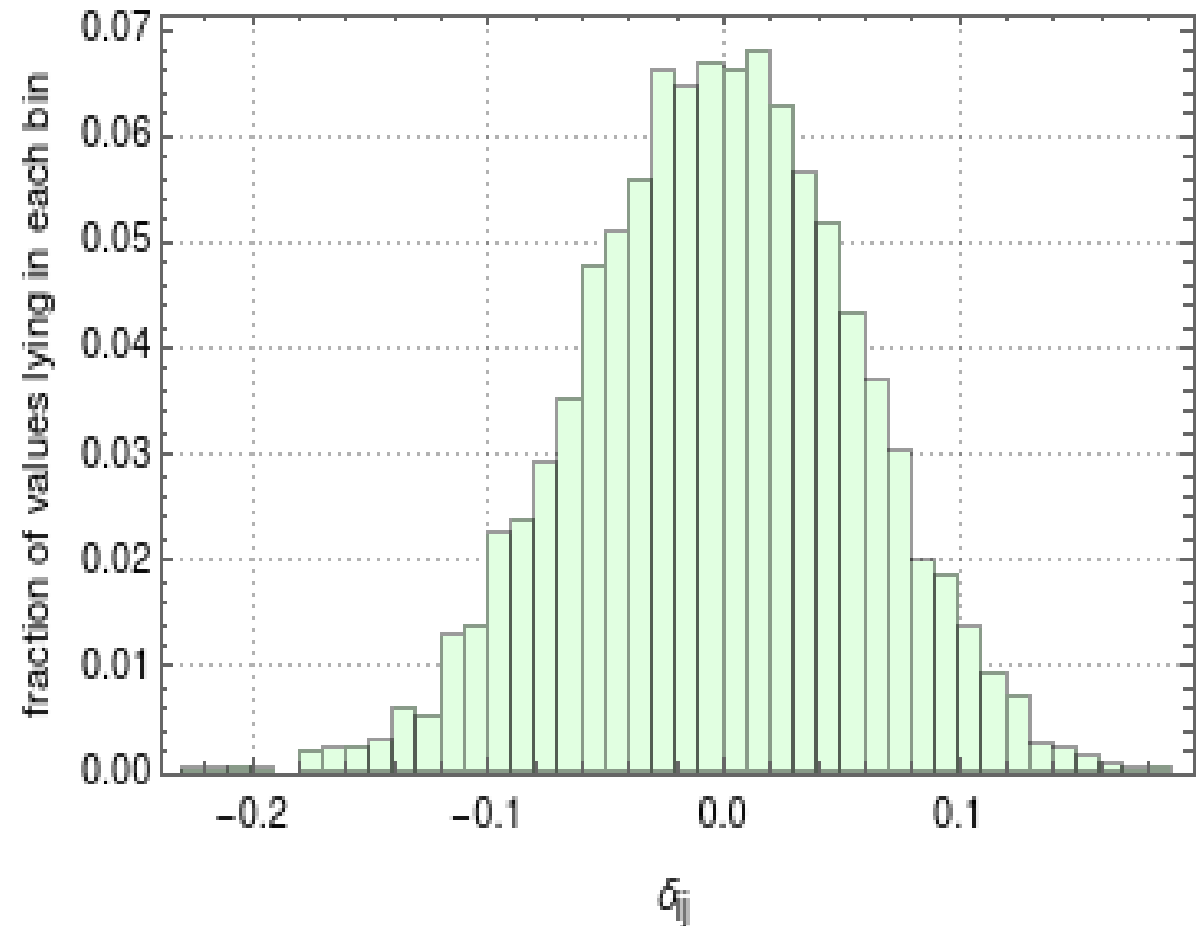
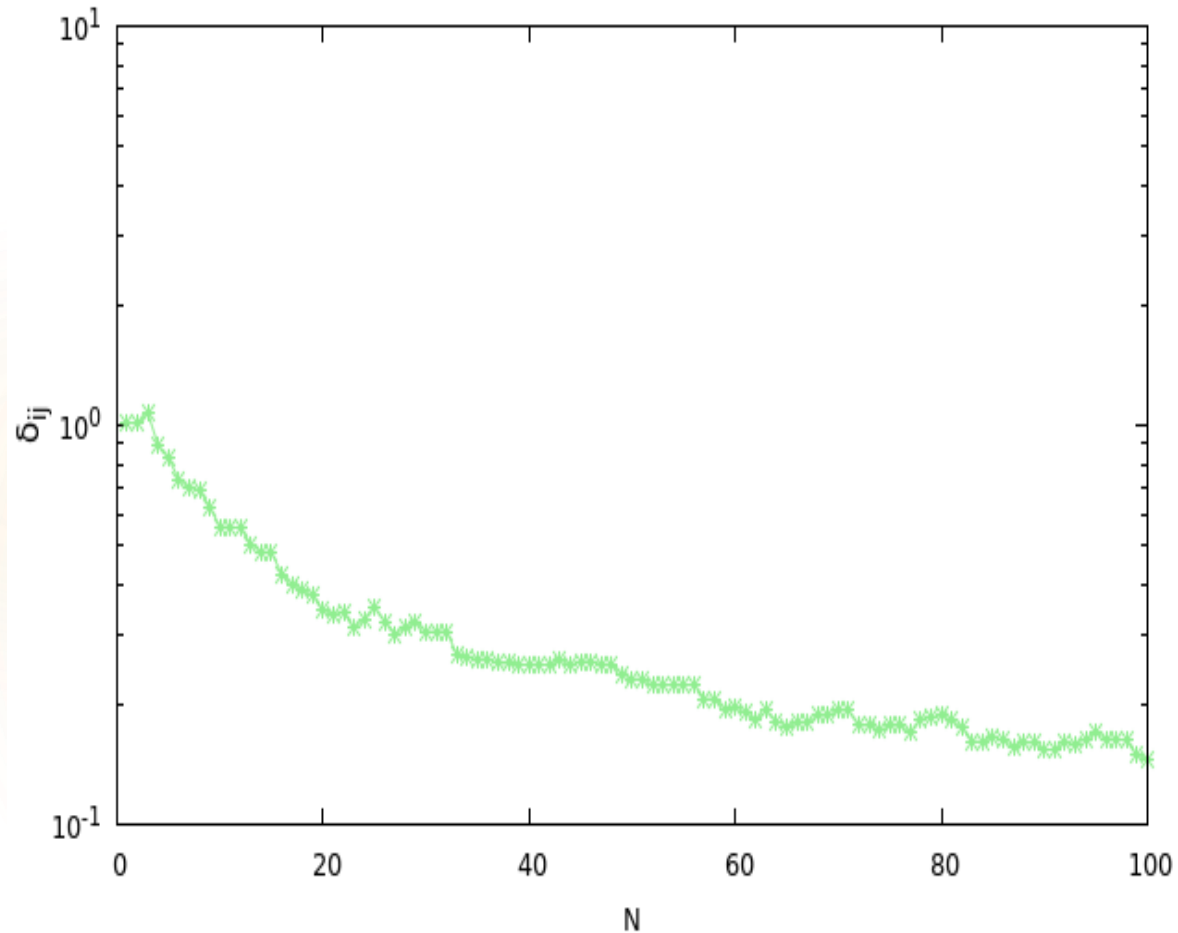
$$(\delta_{ij})_{LR/RL} = \frac{\Delta A^u v_u}{m_0^2} \cong \frac{3d_0 v_u}{\sqrt{N} \tilde{m} M}$$

## Result: Dilution of Flavor Violation

In this setup, there is a  $1/\sqrt{N}$  suppression in off-diagonal entries that comes from the large number of hidden-sector fields.

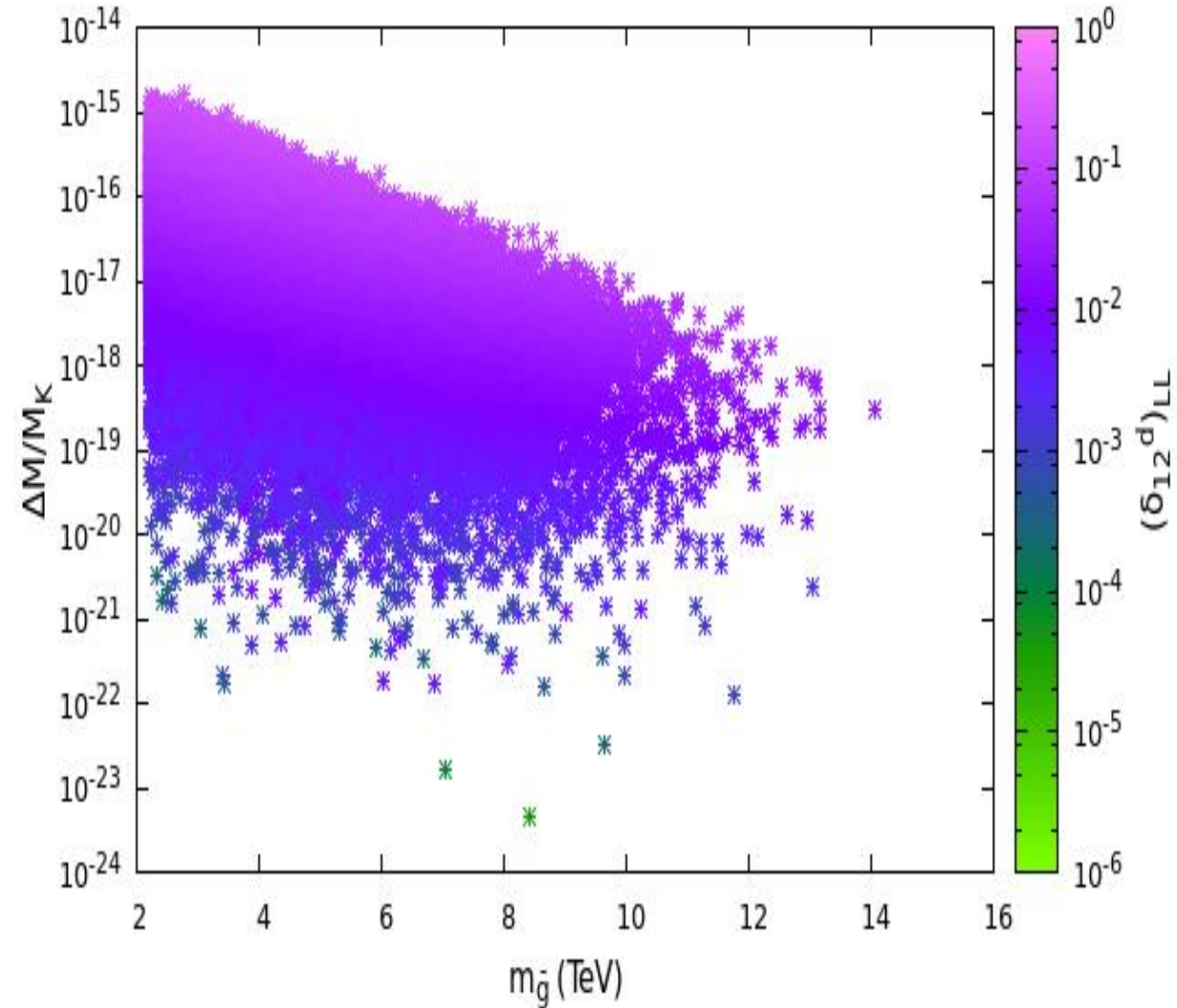
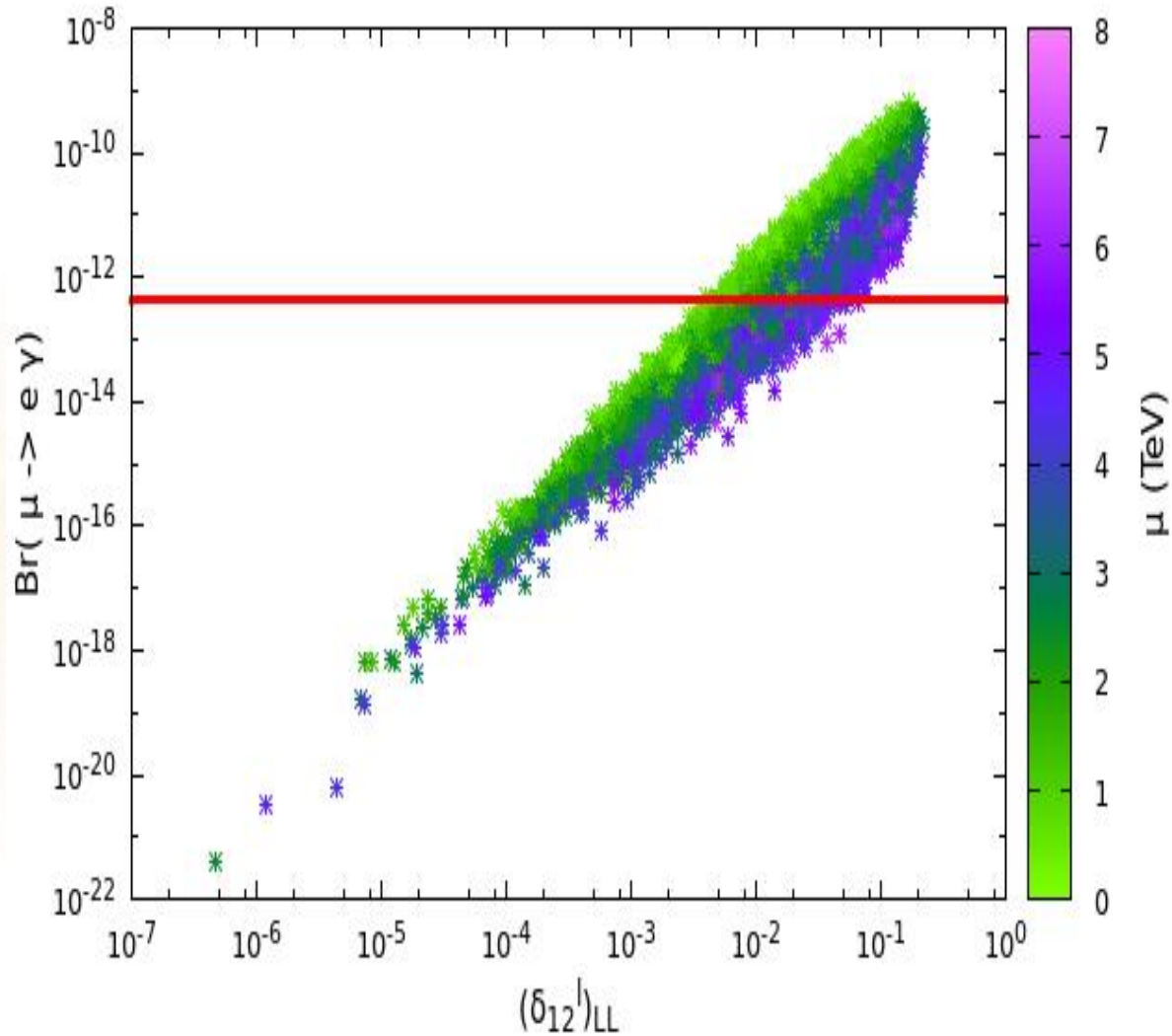


$N = 100$ ,  $\langle \delta_{ij} \rangle = -0.0023$ ,  $\sigma_{\delta_{ij}} = 0.0581$

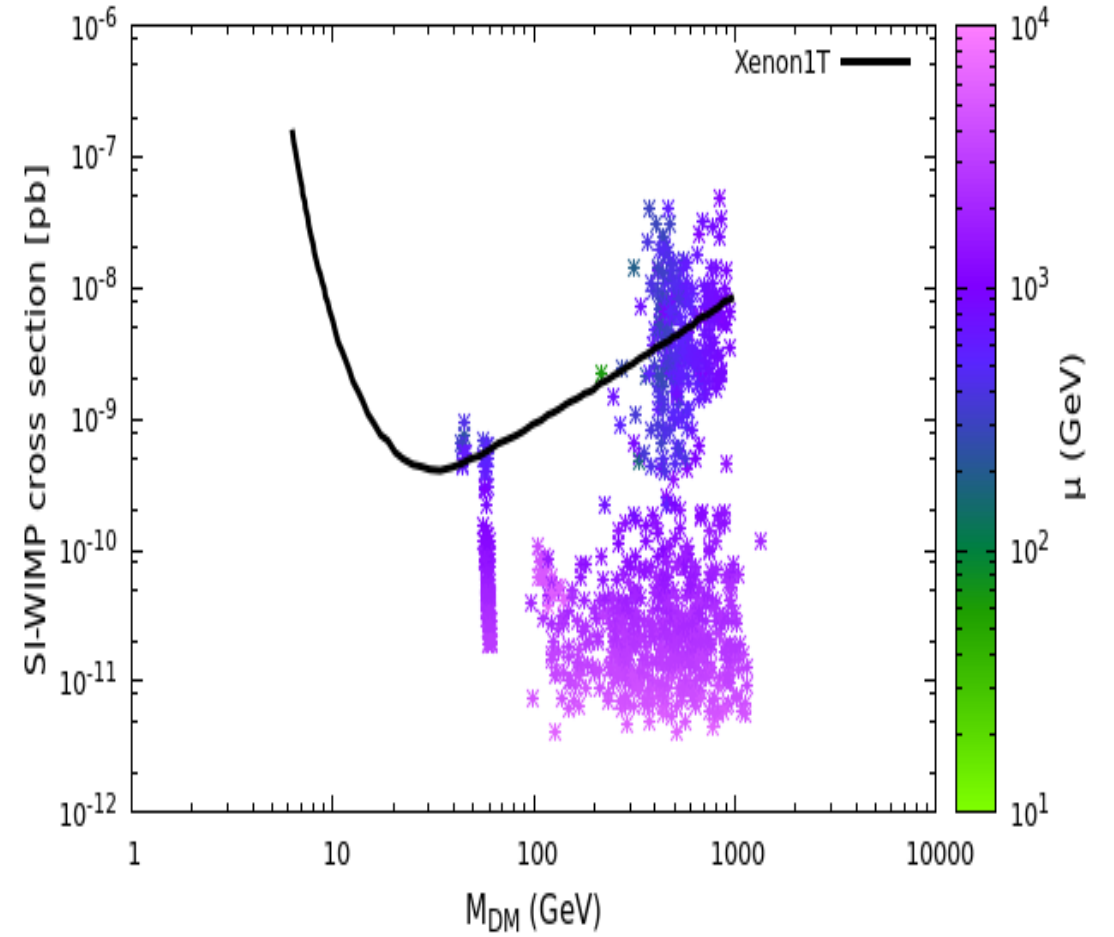
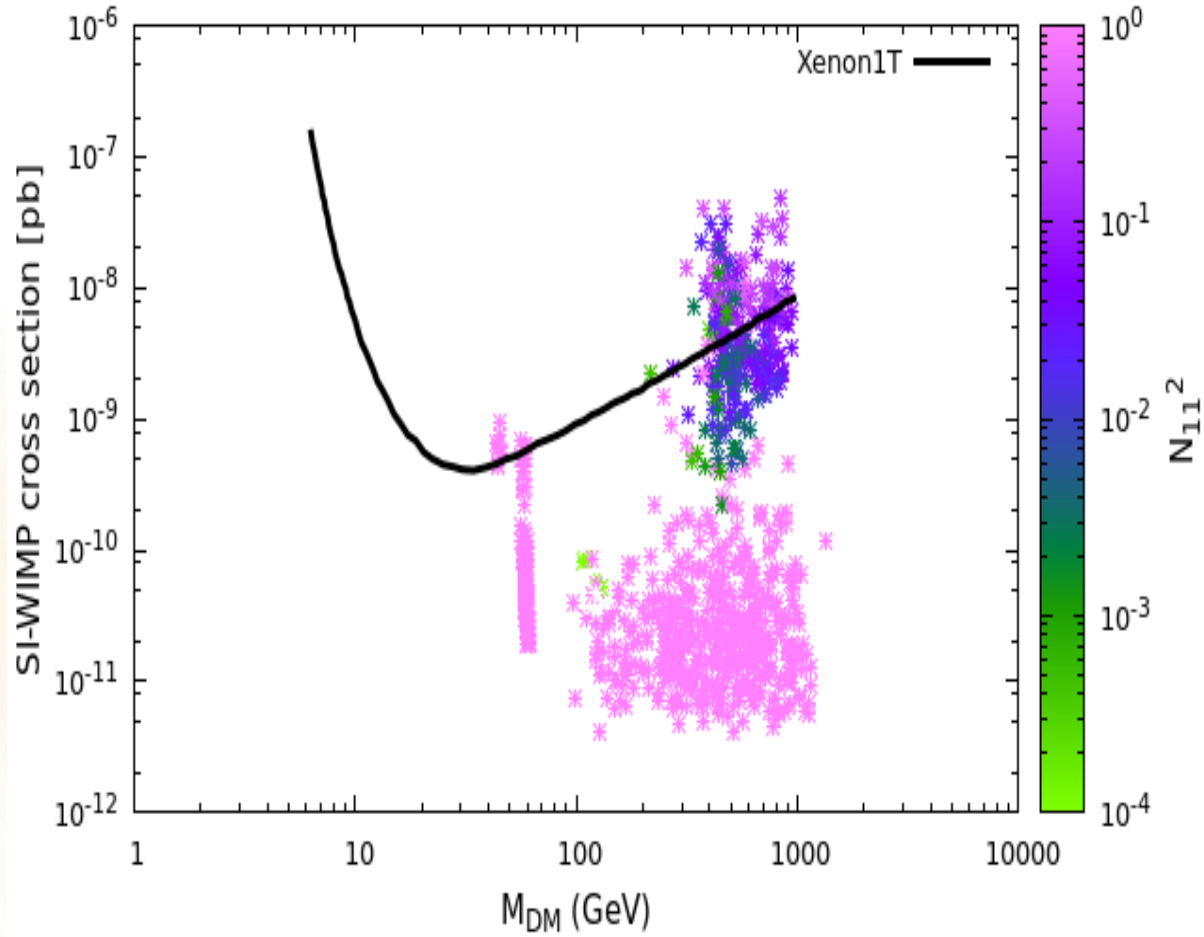


# Flavor and Dark matter phenomenology

- We consider the two of the strongest constraints, i.e. the mass difference between the neutral  $K$ -mesons,  $\Delta M_K$  and the leptonic rare decay  $\mu \rightarrow e + \gamma$ .



# Flavor and Dark matter phenomenology



*Thank You*