

# $\chi$ arov: a tool for neutrino flux generation from WIMPs



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with Jeff Lazar, Carlos Argüelles, Ail Kheirandish  
JCAP 10 (2020), 043 [[2007.15010](#)]



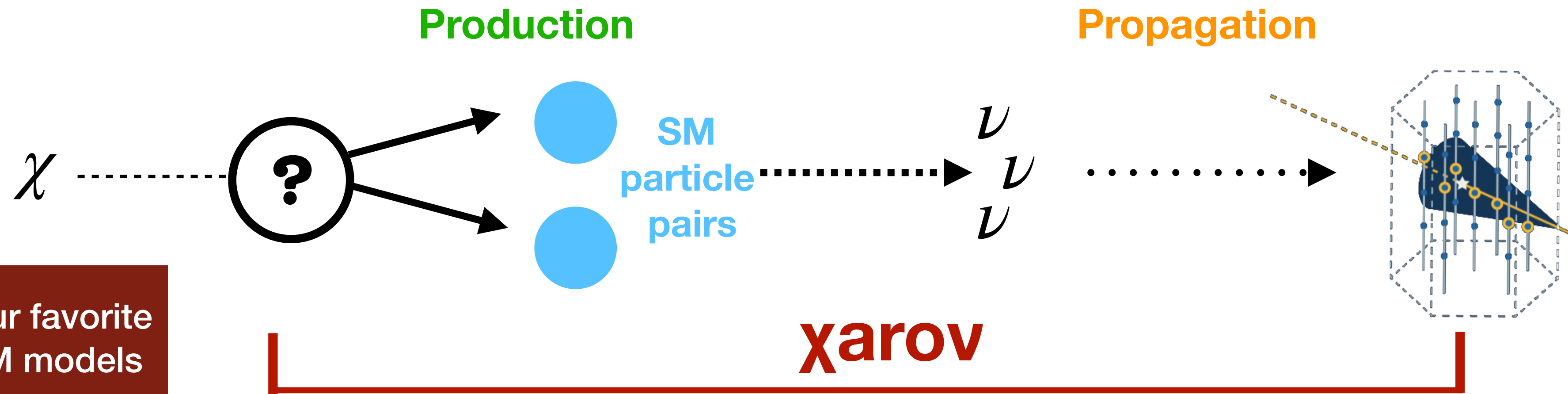
**WISCONSIN**  
UNIVERSITY OF WISCONSIN-MADISON



37<sup>th</sup> International  
Cosmic Ray Conference  
12–23 July 2021

DM in Halos or celestial bodies

Your favorite DM models



- Flux generation is important for tests on experiments.
- We want to have an organized, comprehensive, and flexible software allows computation of neutrino fluxes for different goals.
- Easy to run and new features can be easily implemented.



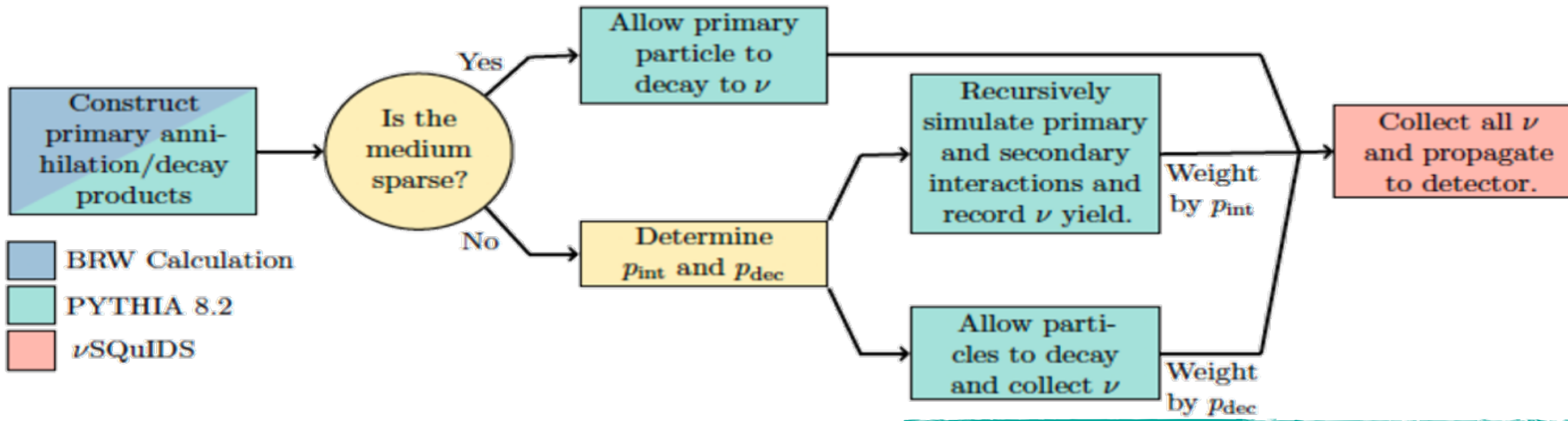
$\chiarov$  is used for several DM analyses on IceCube.



In the spirit of its mythological Greek namesake  $\chiarov$ , bridges the dark sector and Standard Model



# Framework



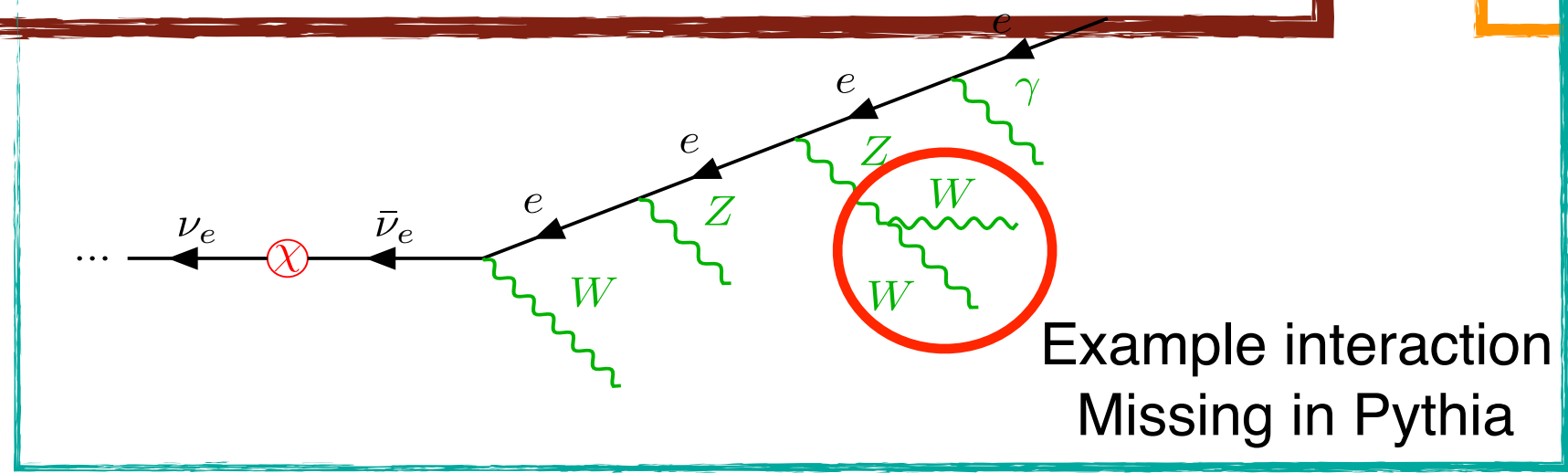
- BRW Calculation
- PYTHIA 8.2
- νSQuIDS



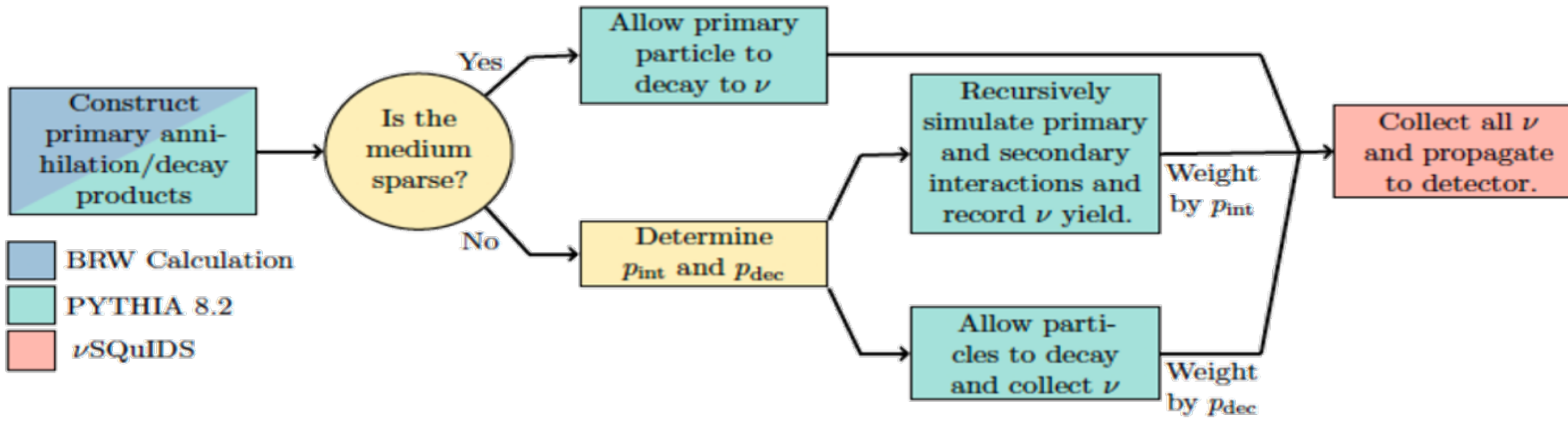
BRW [2007.15001]  
 Dark Matter Spectra from the Electroweak to the Planck Scale  
 Christian W. Bauer,<sup>1,2</sup> Nicholas L. Rodd,<sup>1,2</sup> and Bryan R. Webber<sup>3</sup>

## nuSQuIDS

ν-SQuIDS: A toolbox for neutrino oscillations<sup>☆</sup>  
 Carlos A. Argüelles<sup>a</sup>, Jordi Salvado<sup>c</sup>, Christopher N. Weaver<sup>b</sup>



# Framework



BRW [2007.15001]

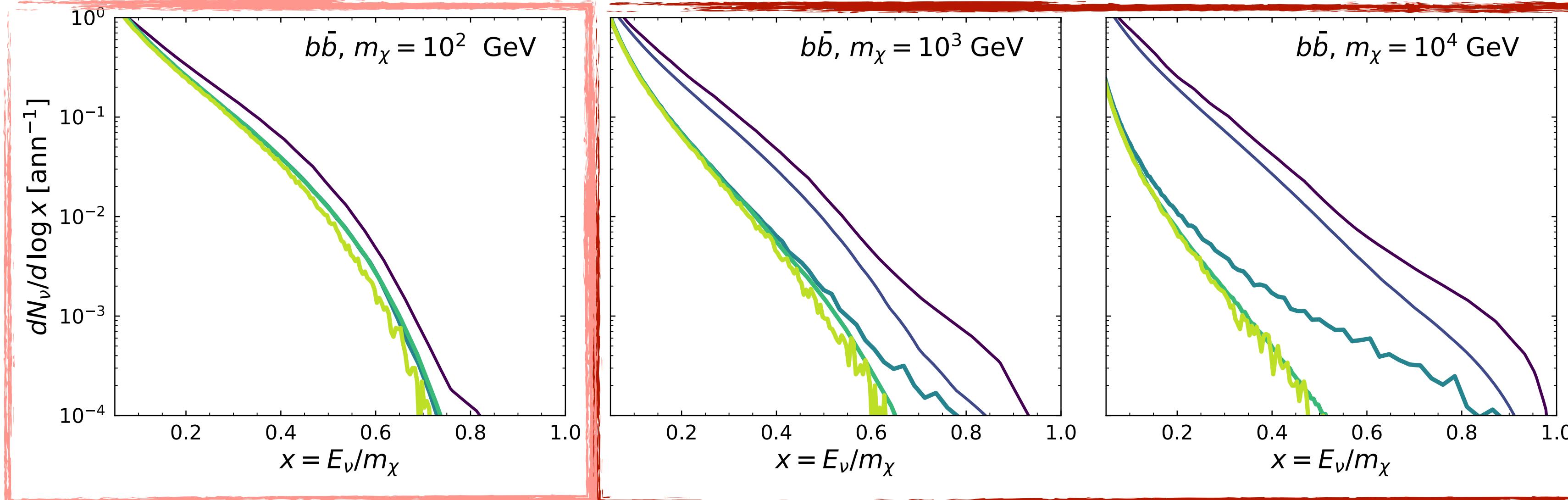
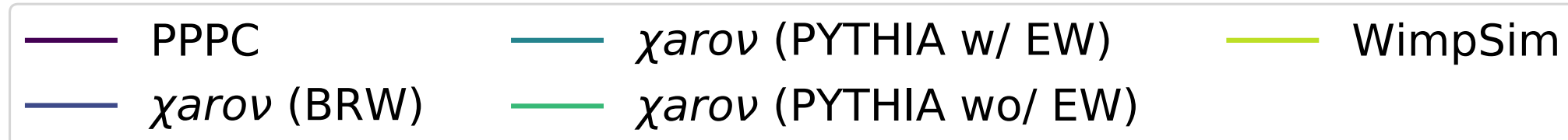
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# nuSQuIDS

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## Solar $\nu_\mu$ flux at production

A Comparison between **PPPC**, **WimpSim**,  $\chi$ arou **wo/ EW interactions**,  $\chi$ arou **w/ PYTHIA internal EW interactions** and  $\chi$ arou **w/ BRW EW interactions**.