

Summary of WG3 Thursday Parallel Session

Bertrand Echenard and Eder Izaguirre

Accelerator-Based Searches

Mediator physics
(coupling strengths, mass scale,
separately coupling to leptons, quarks)

If discovery
A path towards a Lagrangian

Dark Matter coupling strength to mediator

Sensitivity to multiple thermal DM scenarios
(scalar DM, majorana, pseudo-dirac)

If Null Result

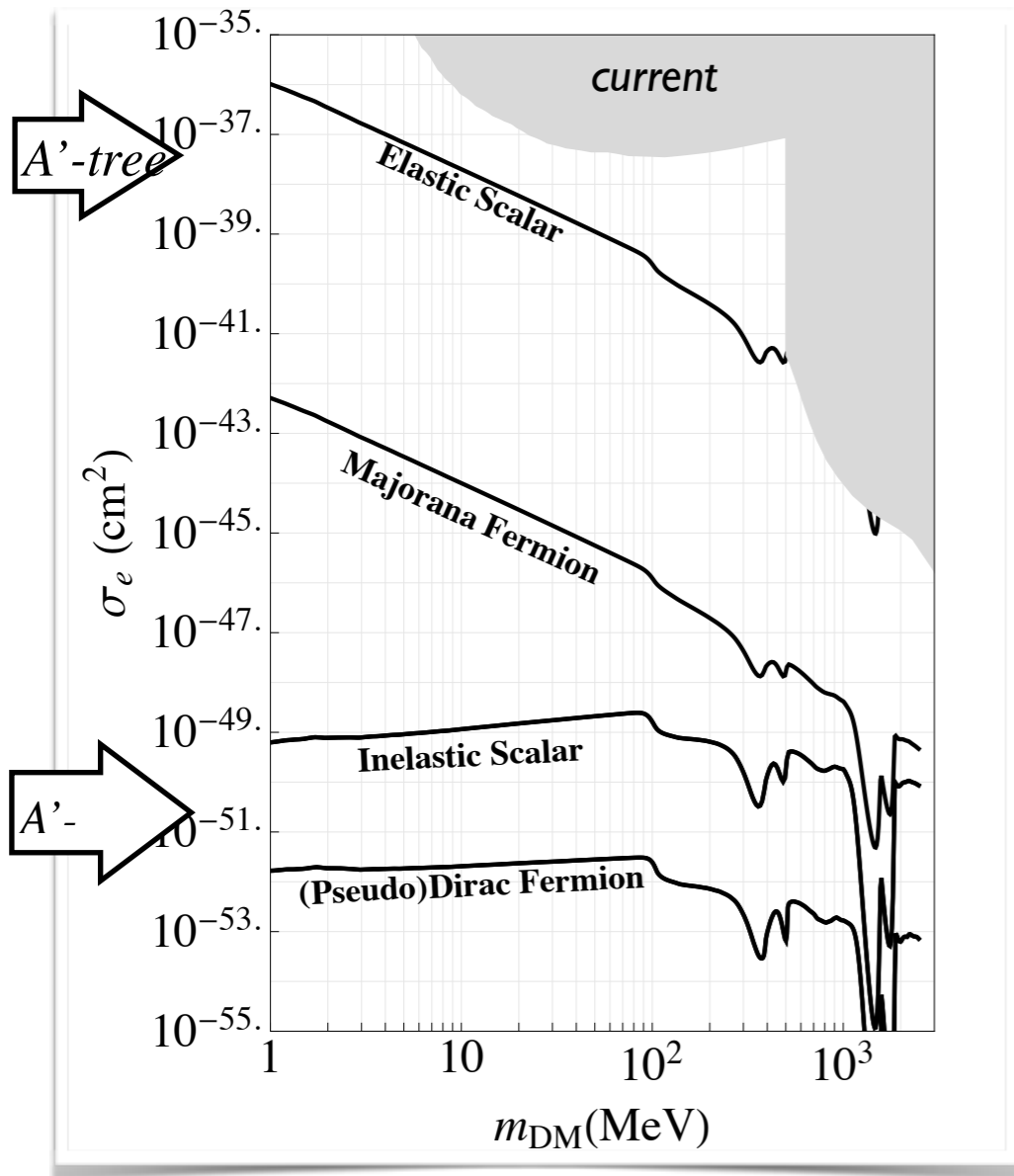
Robust statement about
light thermal DM scenarios

Accelerator-Based Searches

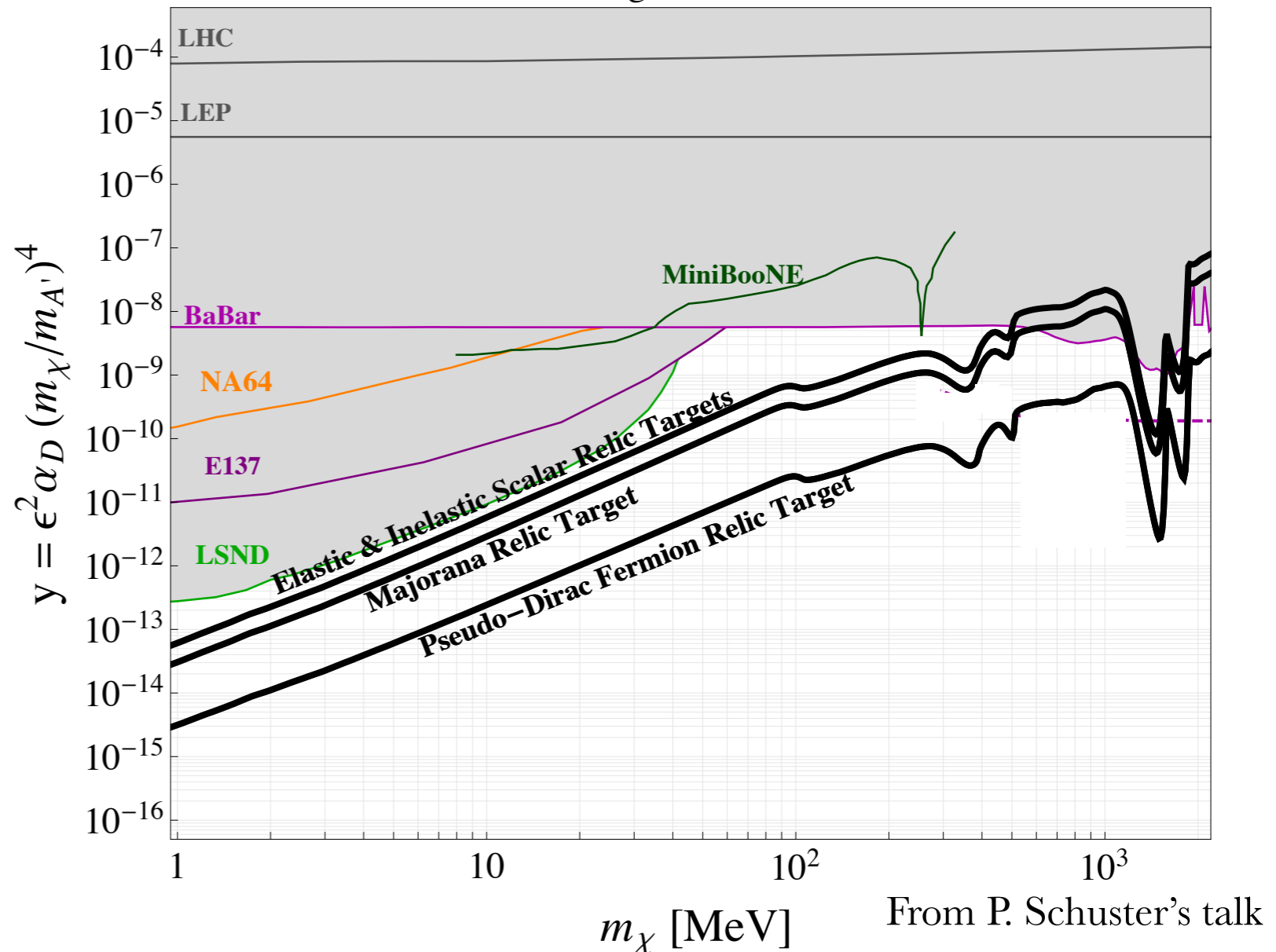
Offer a robust program to go after light thermal DM targets

Sensitive to large class of thermal DM target scenarios

MeV-GeV Thermal



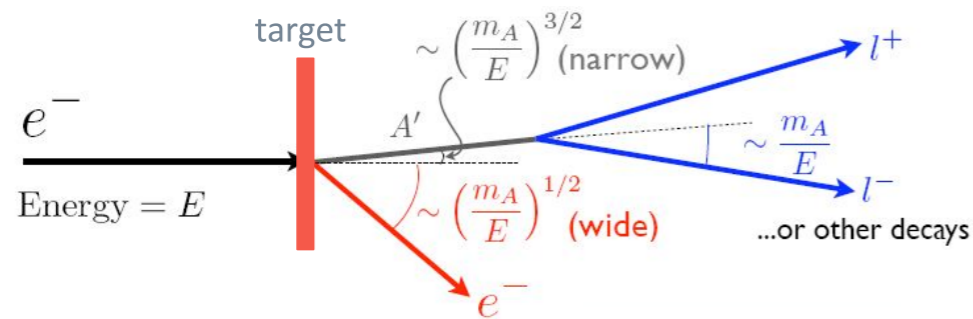
Thermal Relic Targets & Current Constraints



From P. Schuster's talk

Current Landscape

Direct access to mediator physics

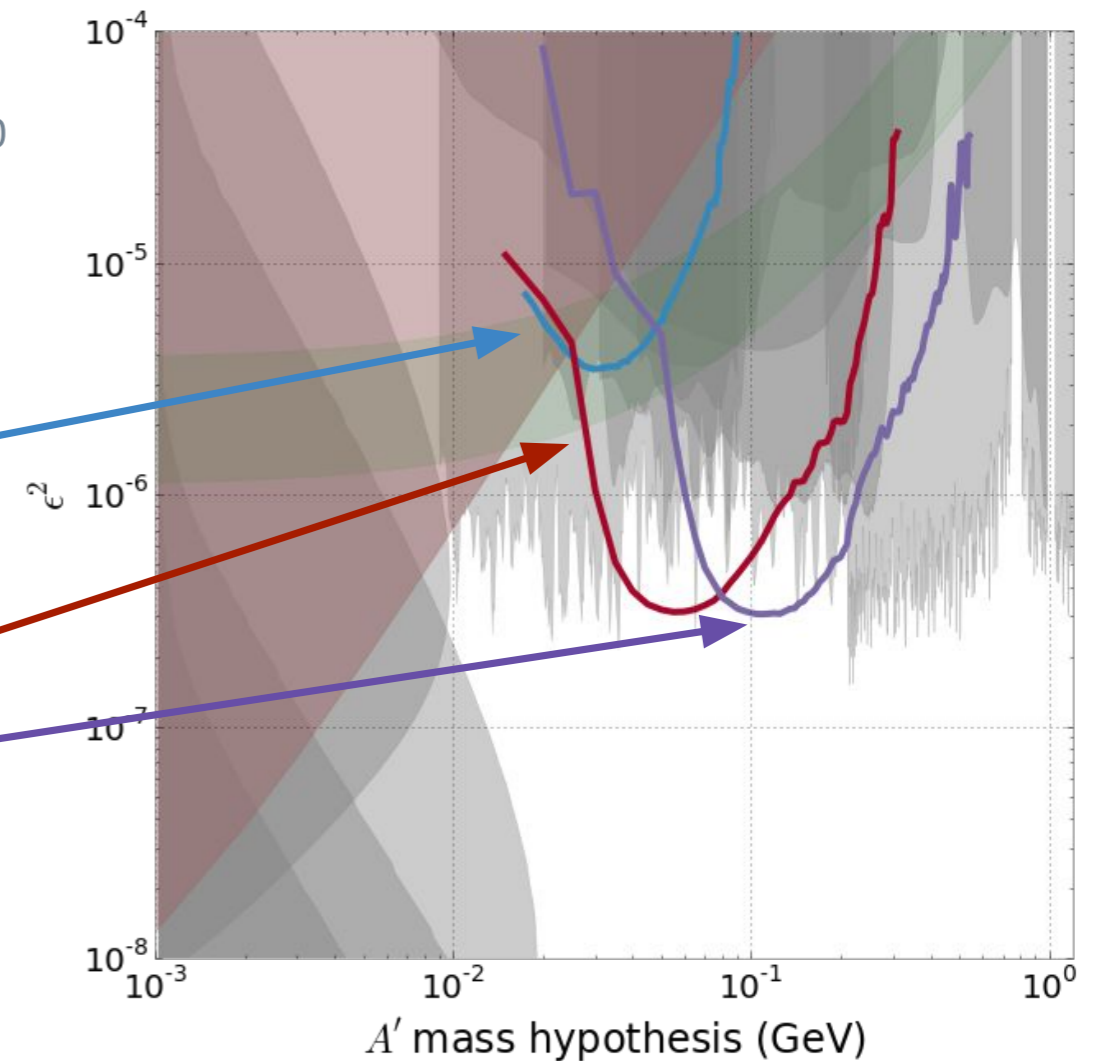


HPS has been approved for its full time of running (180 Days)!

First extended run is planned for the summer of 2018

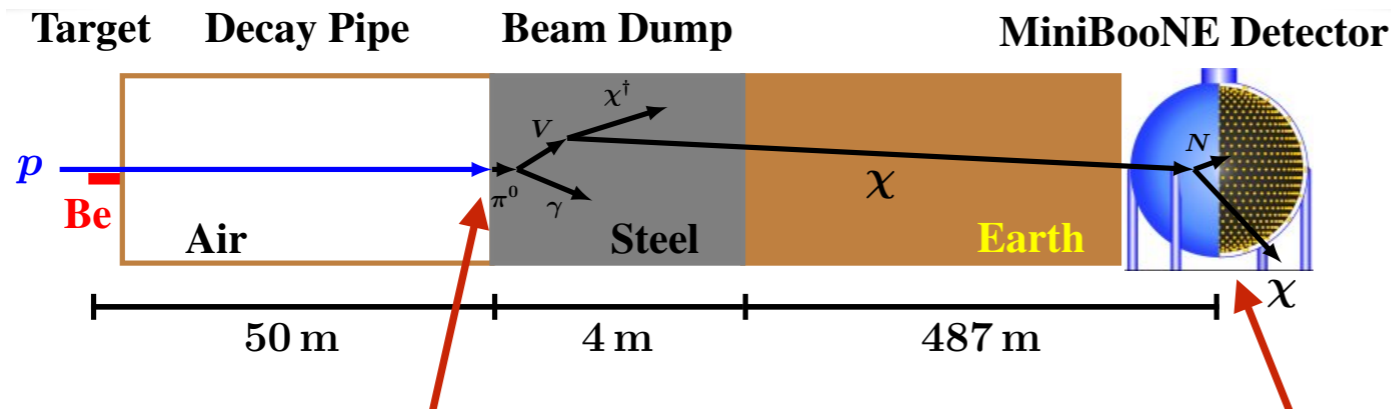
2015 Engineering Run
1.5 days @ 1.05 GeV

2018-2020 Physics Run
12 Weeks @ 2.2 GeV
12 Weeks @ 4.4 GeV



Current Landscape

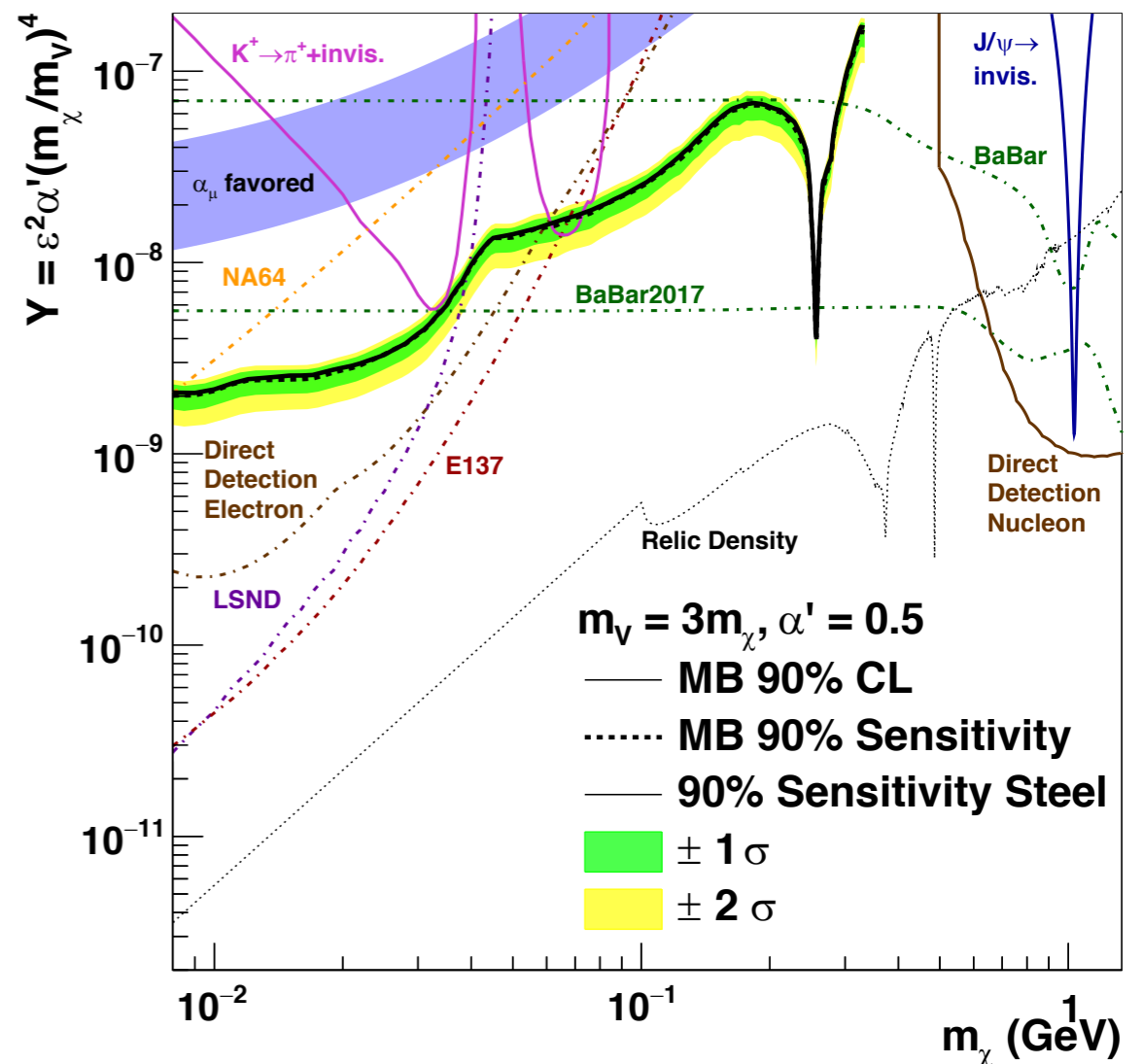
Proton Beam-dump approach



$$\sim \epsilon^4 \alpha_D$$

Confidence Limit Results

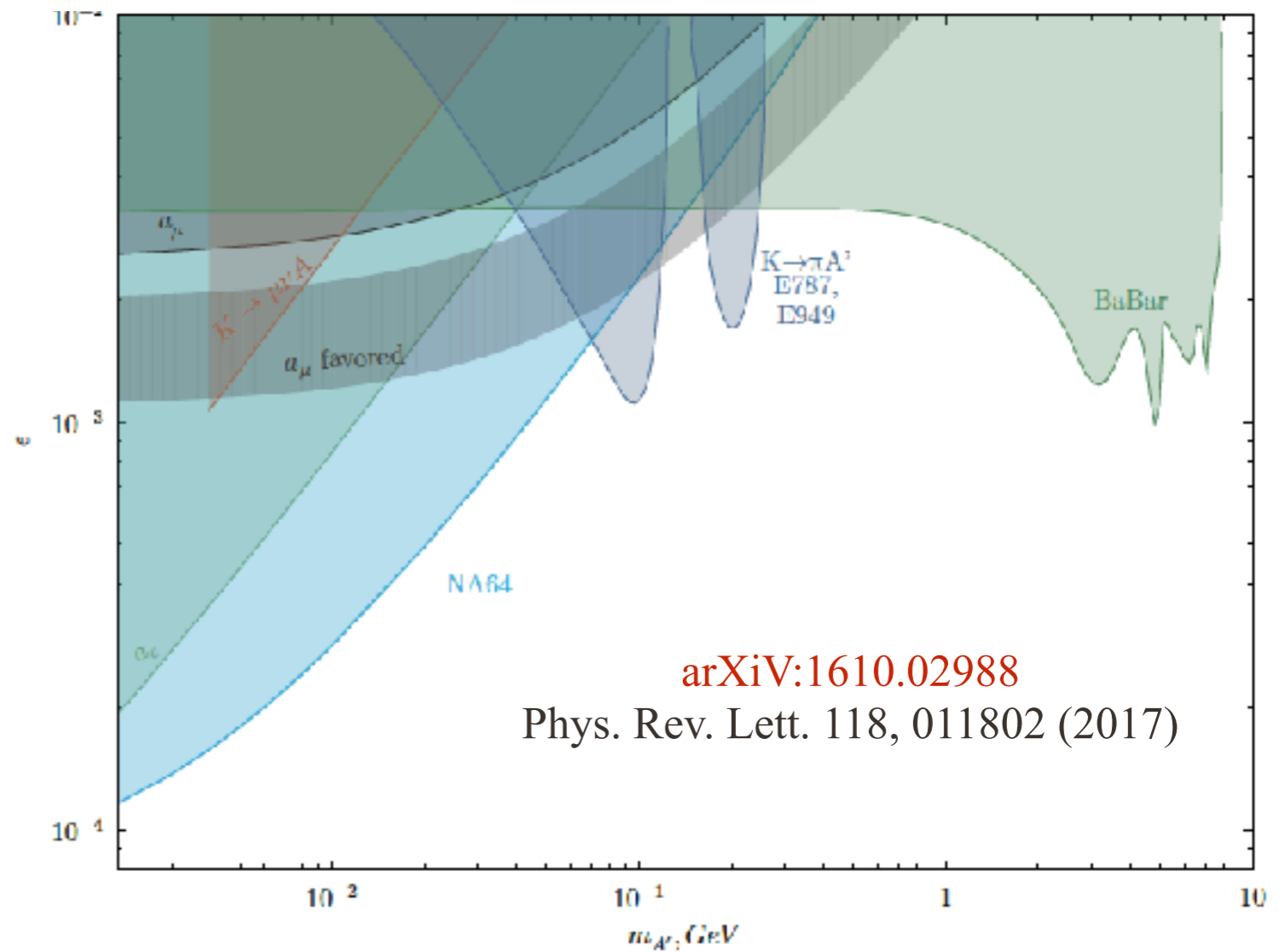
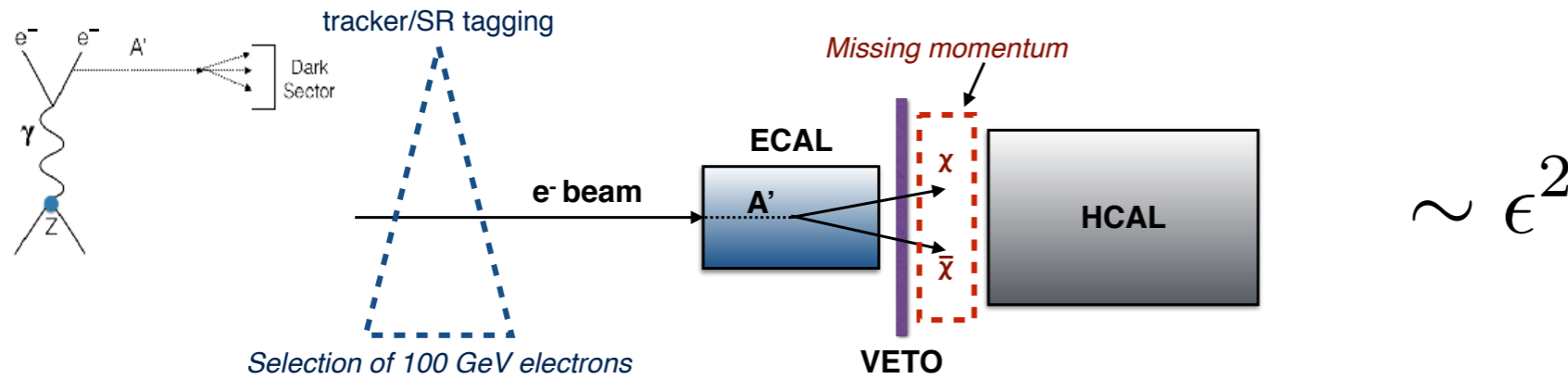
- Many ways to “slice” parameter space
- This parameter choice is rejected as solution for $g-2$ anomaly (Vector Portal)



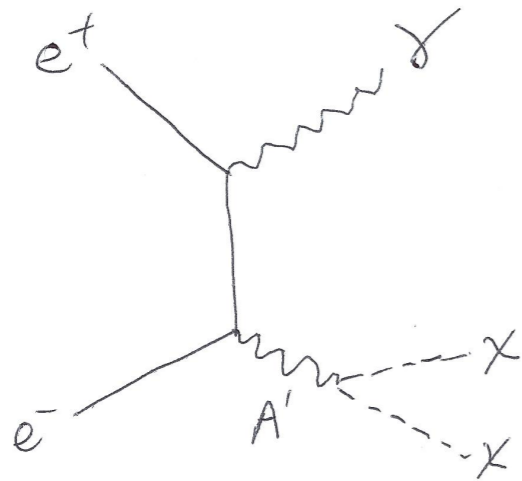
From R. Cooper's talk

Current Landscape

Missing energy

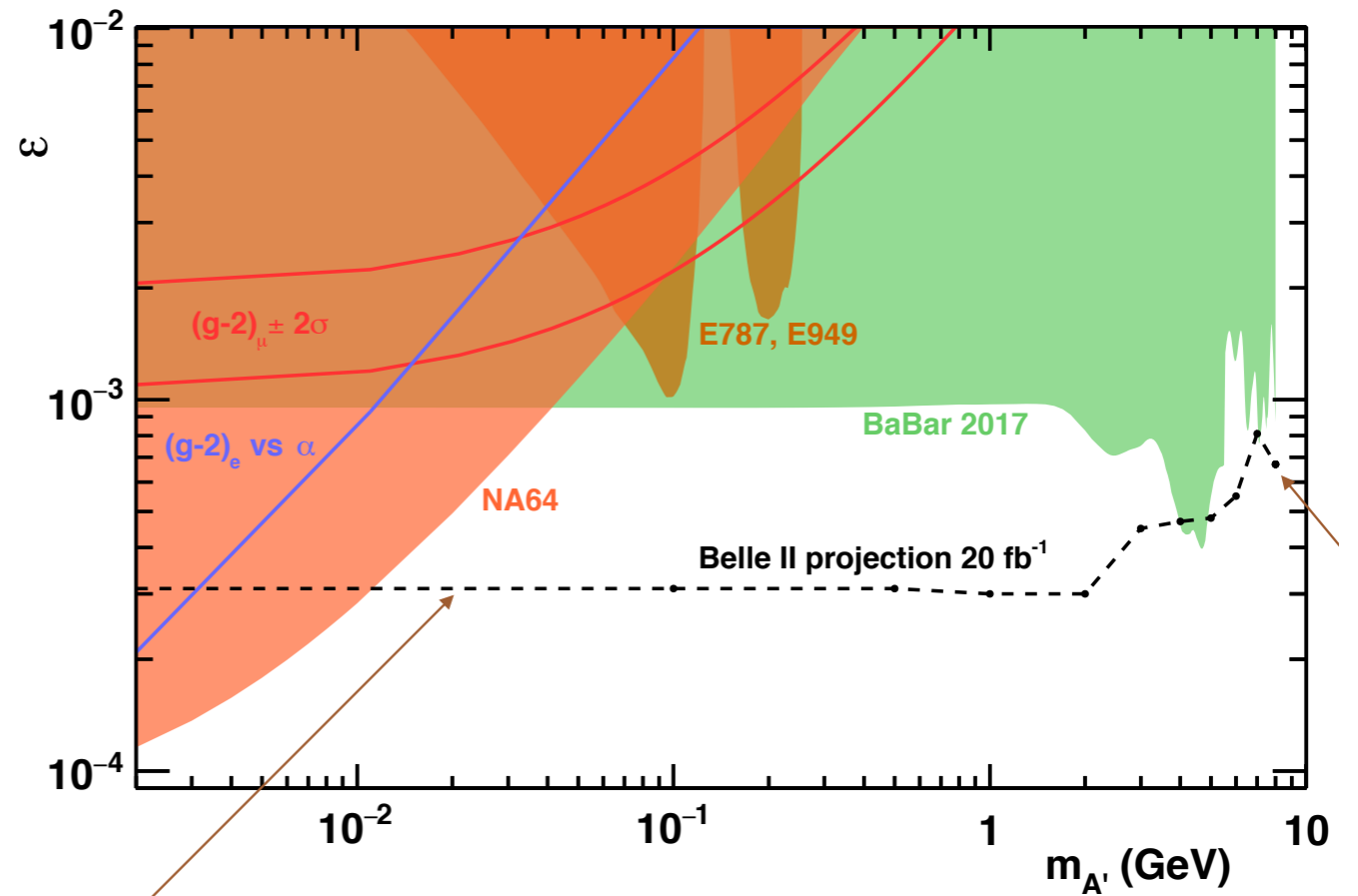


Current Landscape



$$\sim \epsilon^2$$

Can also do dark spectroscopy
e.g. dark higgs



Discussed New Theoretical Ideas

Potential new muon beam-dump experiments (Y. Zhong)

Short-baseline neutrino facilities sensitivity to leptophobic mediators (C. Frugiuele)

6-quark ~ 1.5 GeV DM candidate (G. Farrar)

Complementarity talk on Be^8 anomaly theory implications (I. Gahlon)

Non-Abelian DS at Fixed-Targets (N. Blinov)

Today

New proposals!