EBES (Electron Beam dump Experiment at SY3)
to search for weakly interacting particles in MeV-GeV

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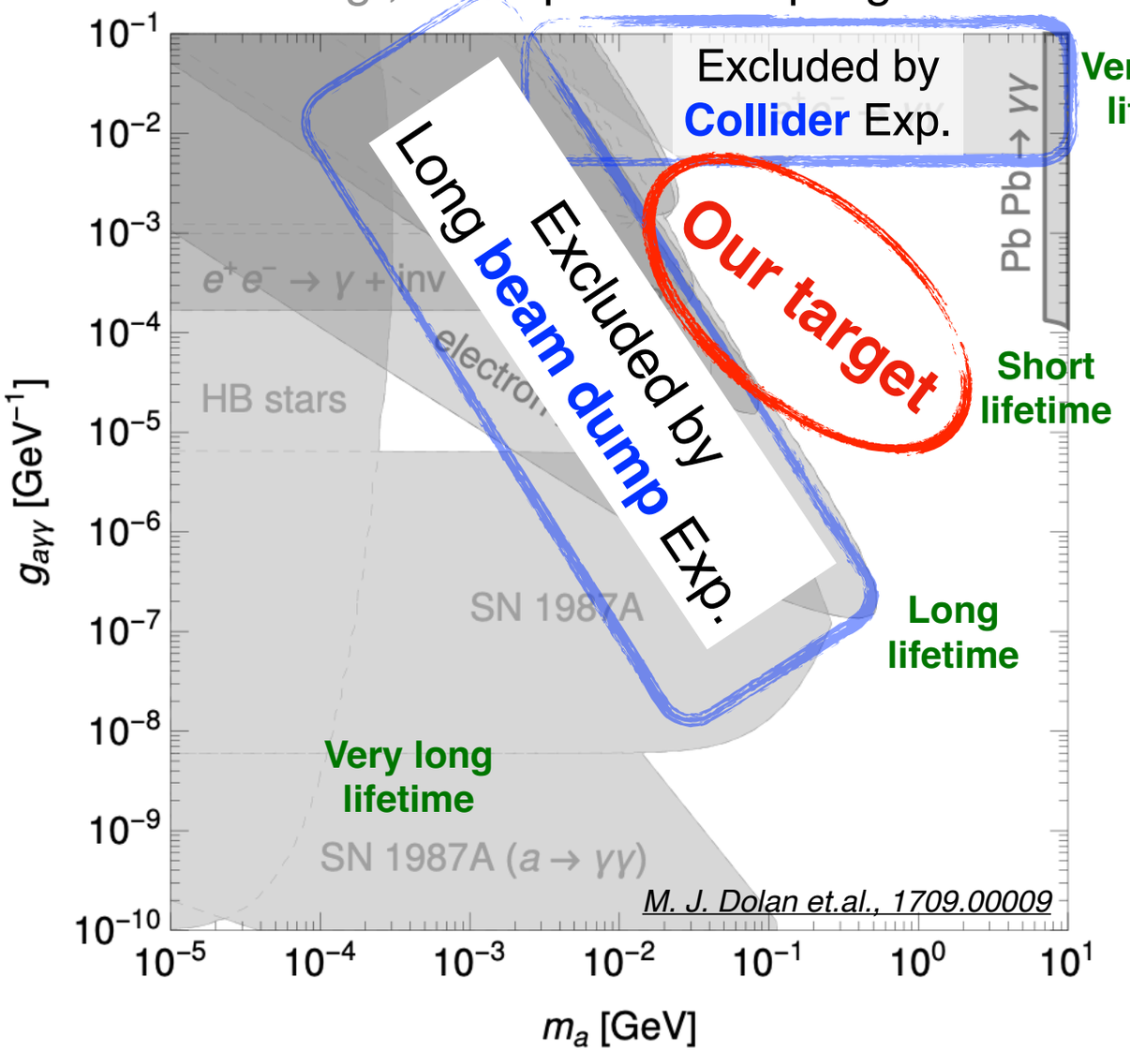
With the help of this grant, we have performed a test experiment at KEK-Linac and detector calibration.

Search for new particles in MeV-GeV by "**short**" beam dump experiment

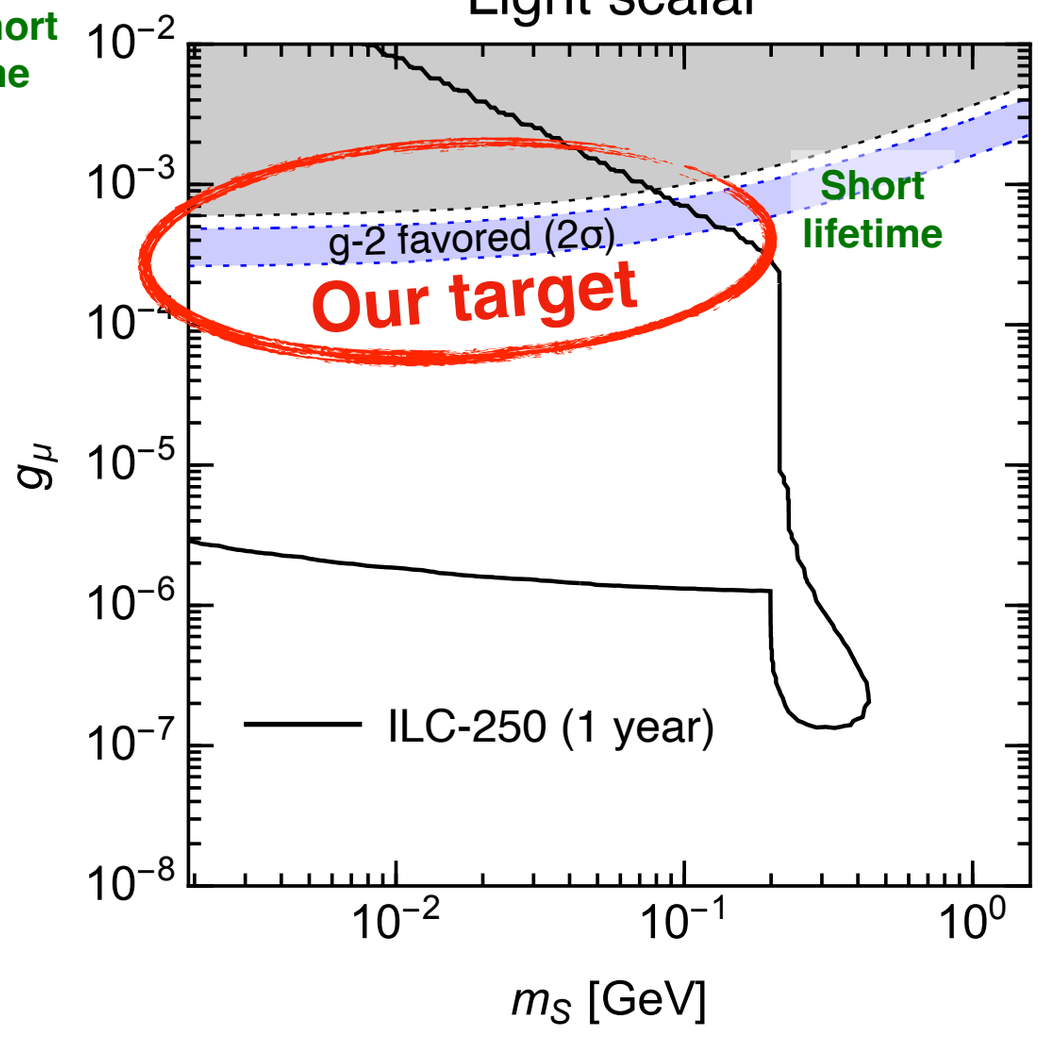
Unexplored region between "Collider" and "Beam dump"

Search for regions favoured by muon g-2 anomary using muons in electromagnetic showers.

e.g., ALPs photon coupling

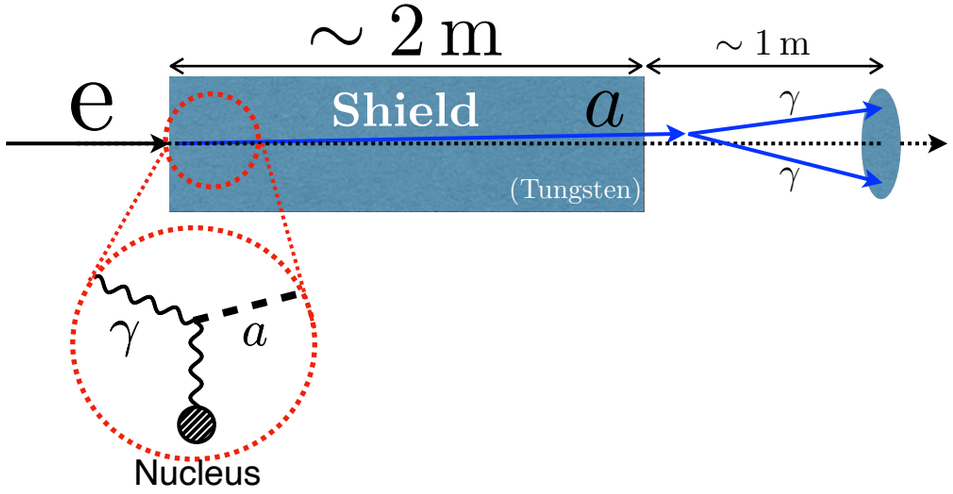


Light scalar

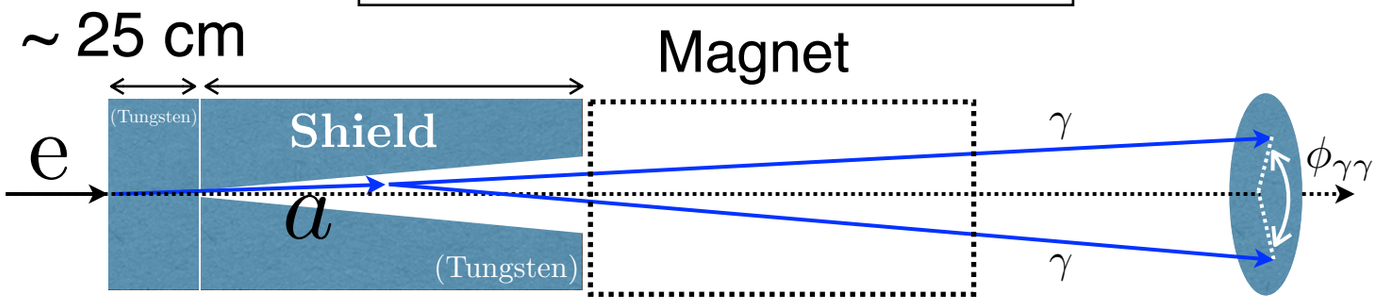


Estimation of ALPs sensitivity for two shielding setups

Setup-1: Simple shield setup
(→ ~zero-BG)



Setup-2: Short shield
(+ Magnet, Sampling ECAL)



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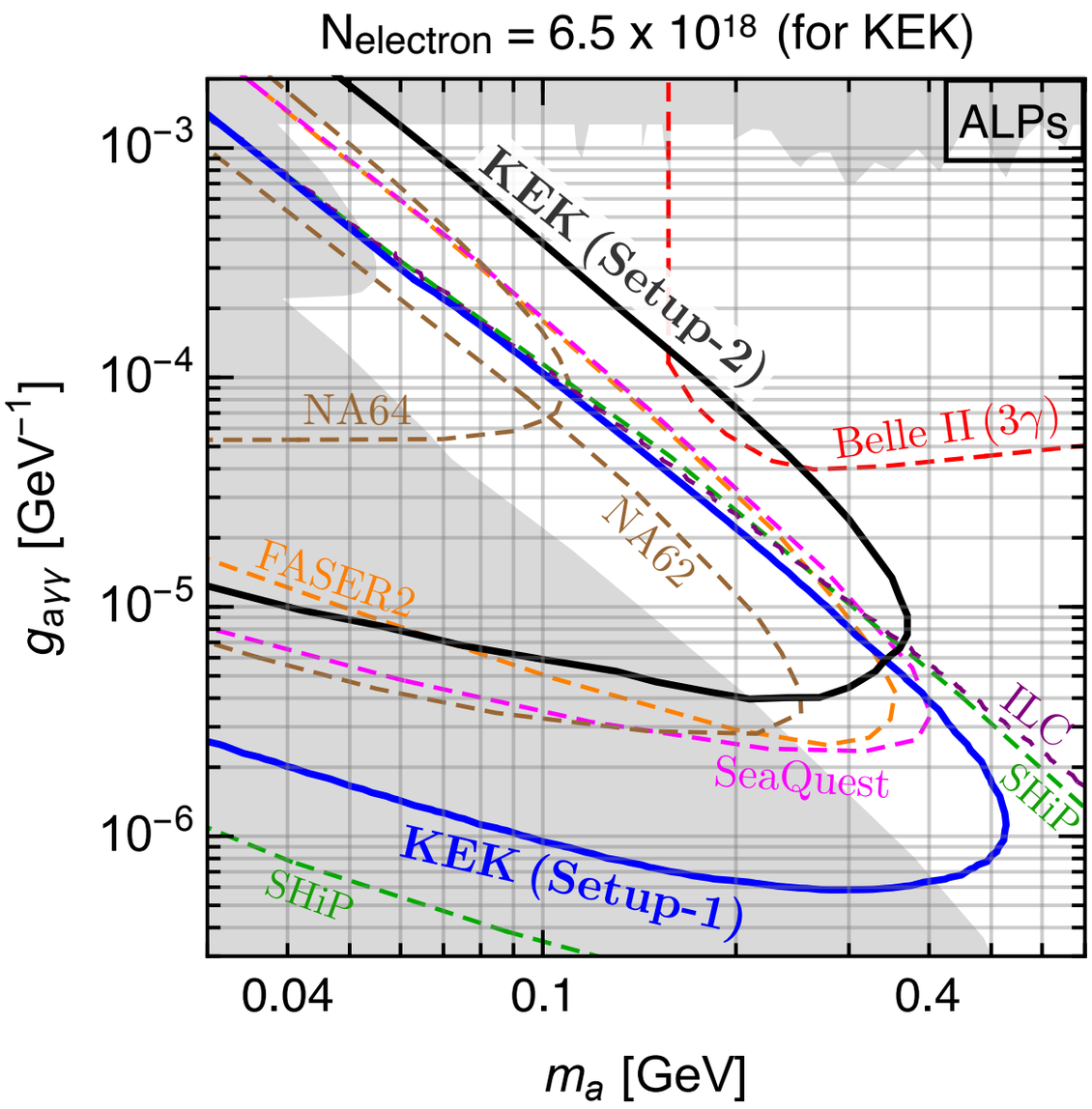
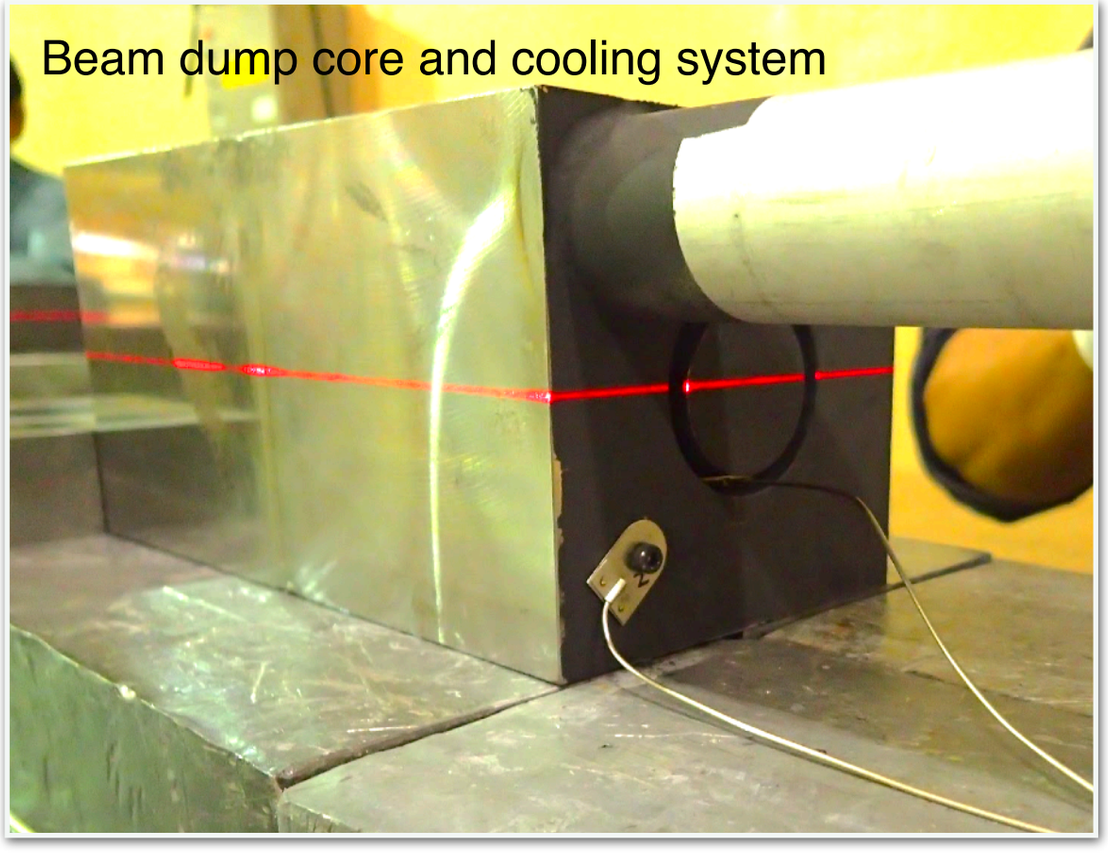


- Electron beam experiments would give better results than proton beam ones due to less background
- Complementary to B05 activity (Belle II)

Background measurement （2022.7）

- Designed and installed beam dump!
- Background occurs near the bending magnet upstream of the beam dump.

  ➡ Additional shielding will be installed for the first physics measurements.



Detector calibration （2022.11）

- Reuse of VENUS EM-calorimeters at TRISTAN
- Calibration of 25 lead-glass detectors with 0.5-4 GeV electron beams at the KEK PF-AR test beamline.

➡ **Almost ready for the 1st physics measurement !**