RCMN – Matière Noire
DAMIC-M

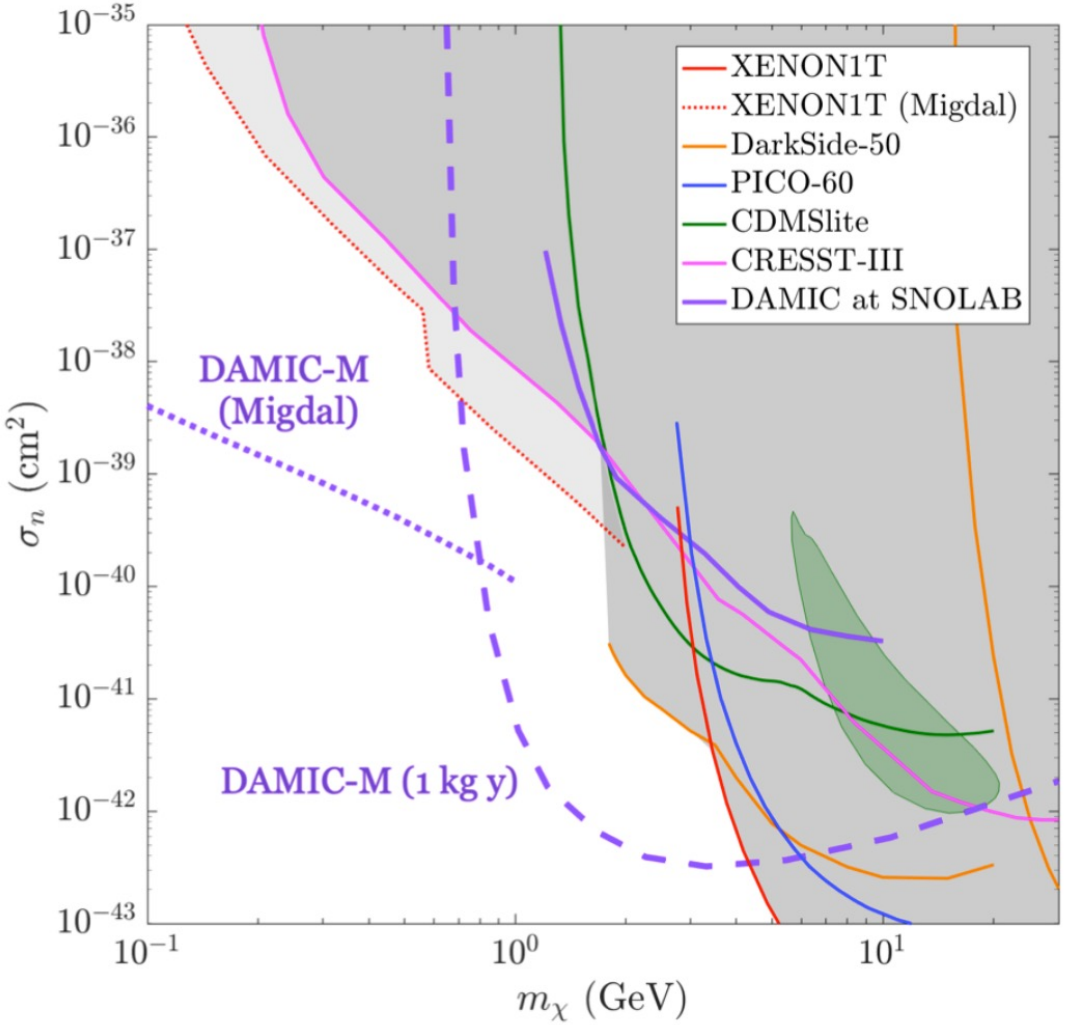
L'équipe

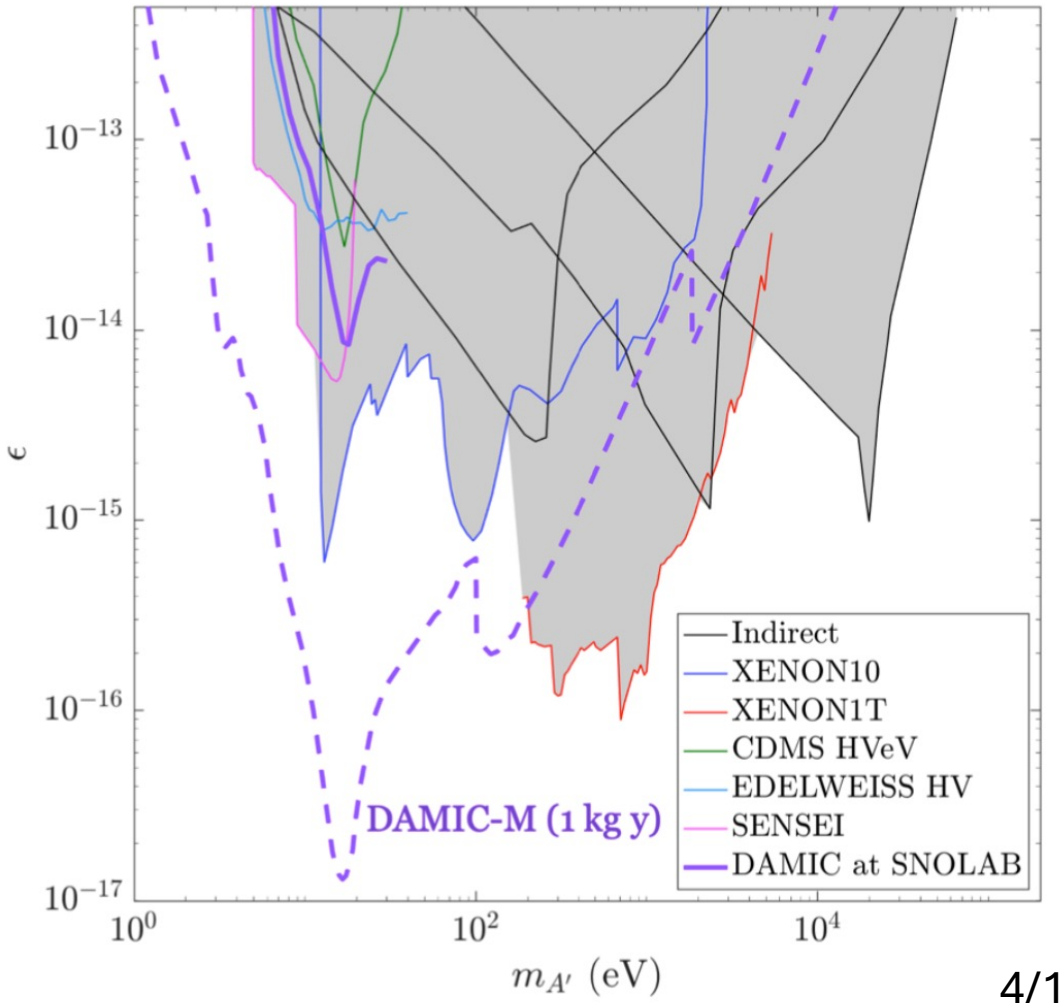
- Antoine Letessier Selvon
- Carla Carvalhais
- Claudia de Dominicis (Postdoc ERC)
- Lounes Iddir (PhD)
- Marc Dhellot
- Olivier Deligny (IJCLab)
- Paolo Privitera (UChicago-LPNHE)
- Romain Gaïor
- Xavier Bertou (CDD)

Croissance avant la fin de l'année

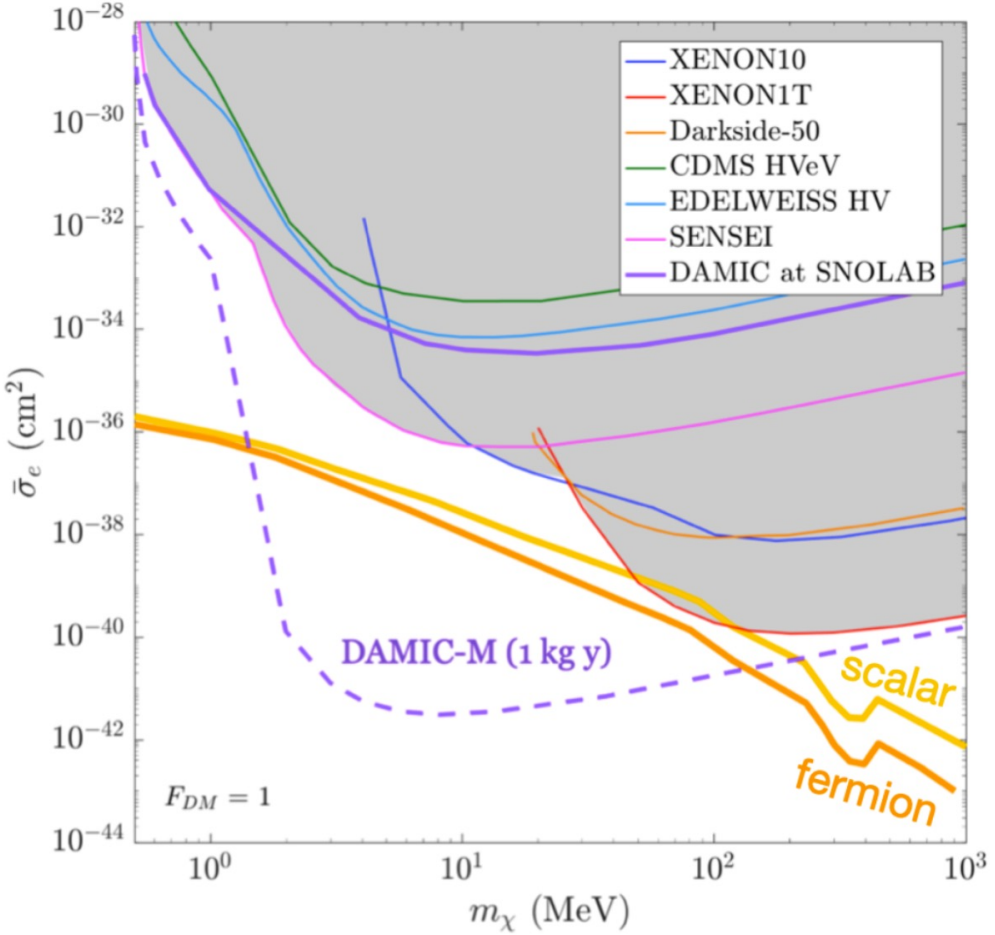
- Alvaro Chavarria (UW)
- Sravan Munagavalasa (UChicago)
- 1 postdoc IN2P3 (entretiens en cours)
- Projet EDIM, Exploitation of the DAMIC-M Instrument at Modane (ANR, en évaluation phase 2):
  - LPNHE: 1 Postdoc (3 ans), 1 PhD
  - IJCLab: 1 Postdoc (3 ans)

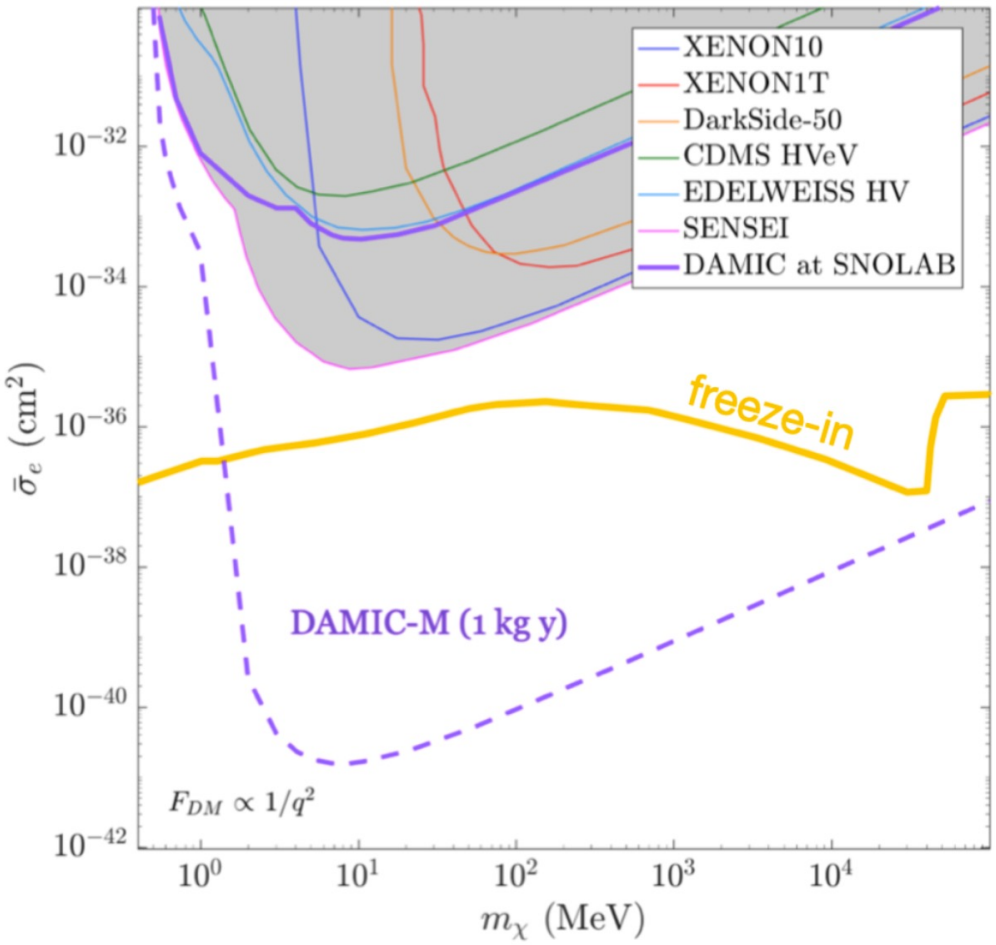
Potentiel de DAMIC-M: WIMP, Photon sombre



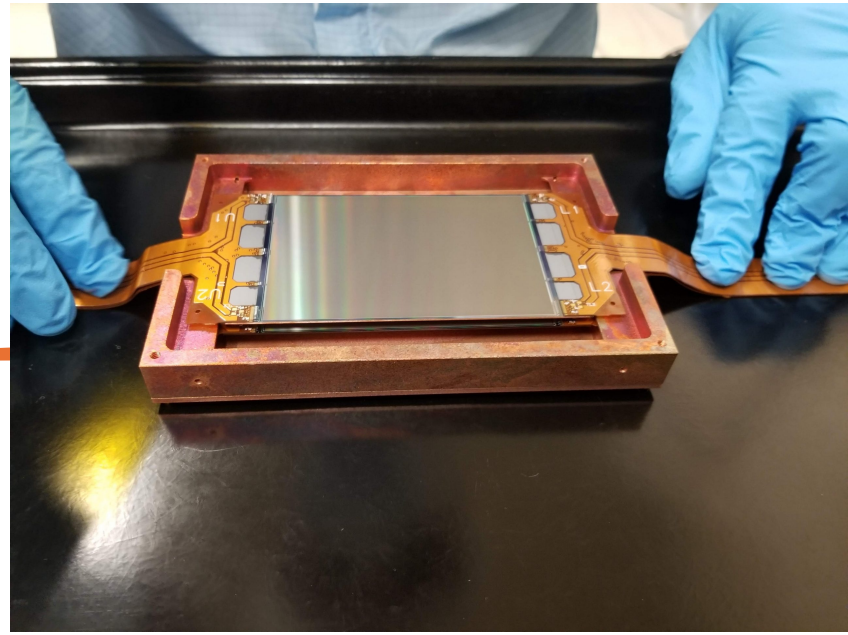


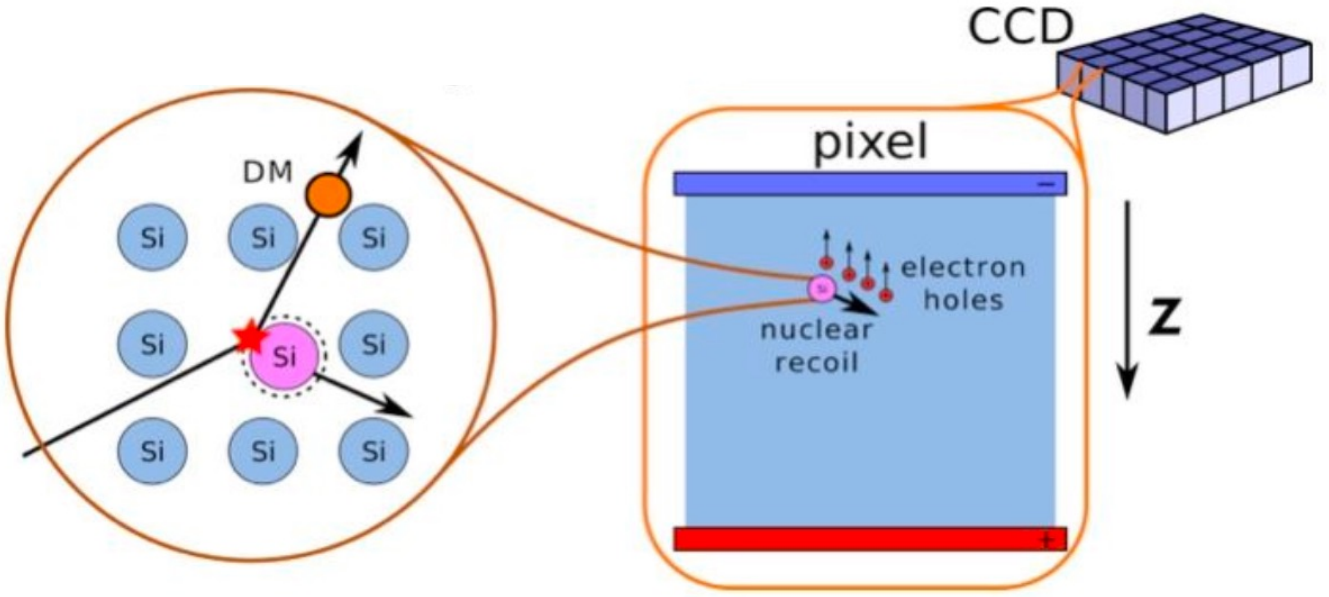
Le cas du secteur sombre (Dark Sector)

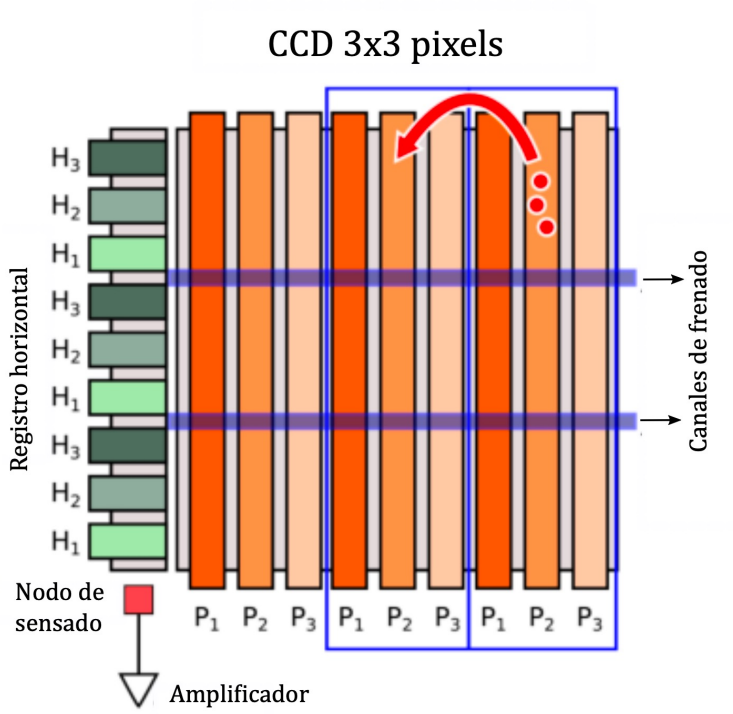


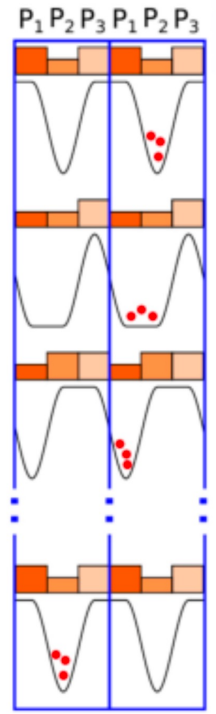


CCD: principe de détection



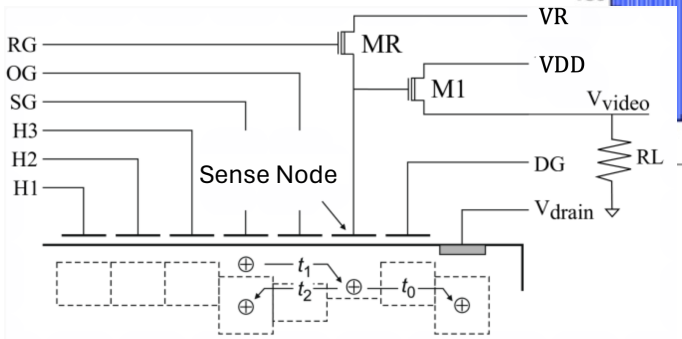


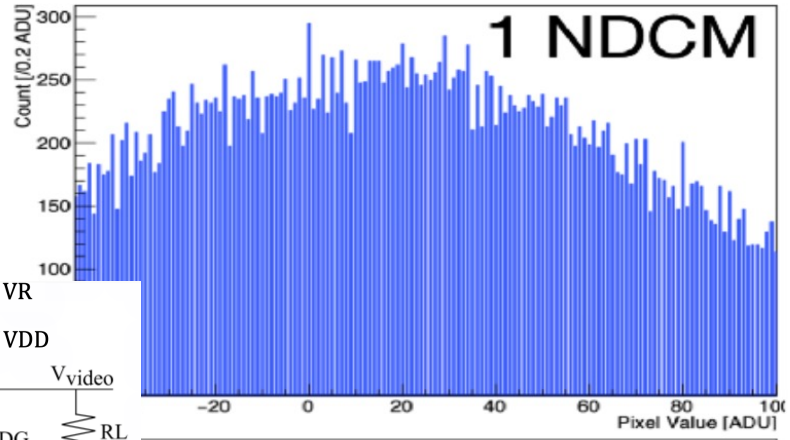


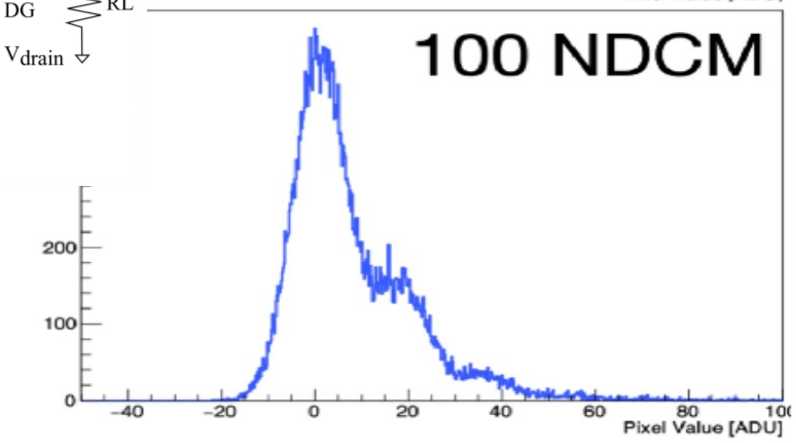


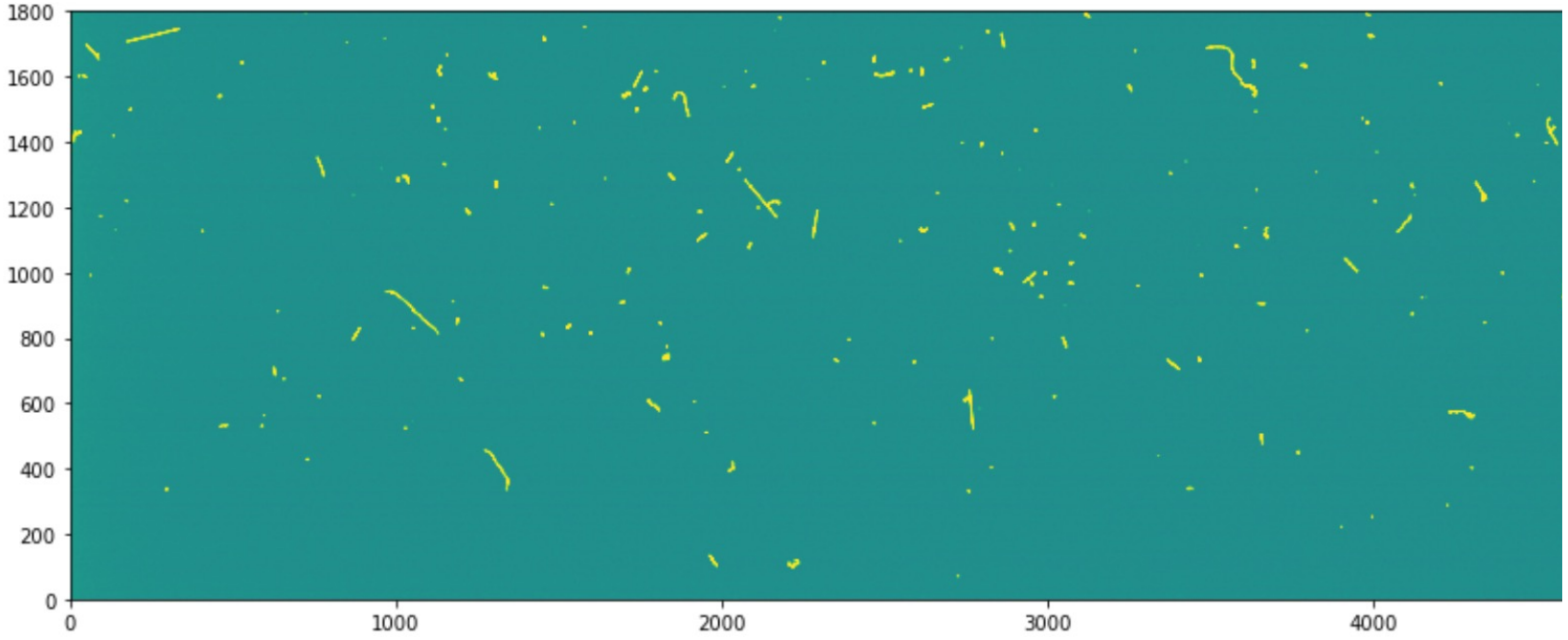
Skipper CCD

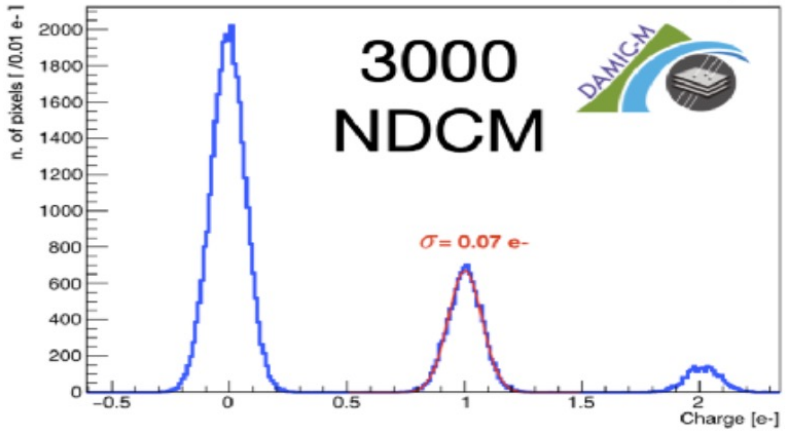
- Proposés en 1970
- Première image 2017
- Technologie mature maintenant











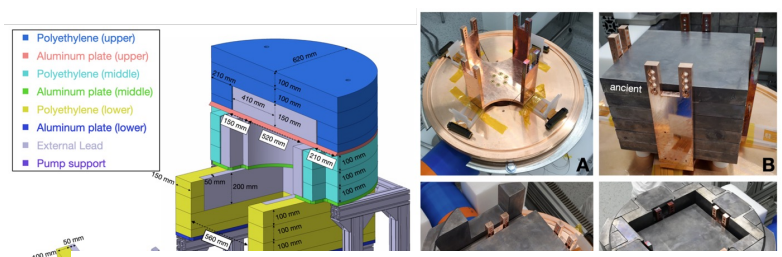
Premiers résultats LBC

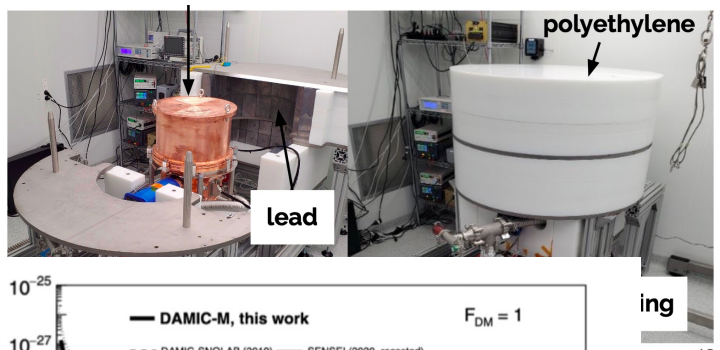
First Constraints from DAMIC-M on Sub-GeV Dark-Matter Particles Interacting with Electrons

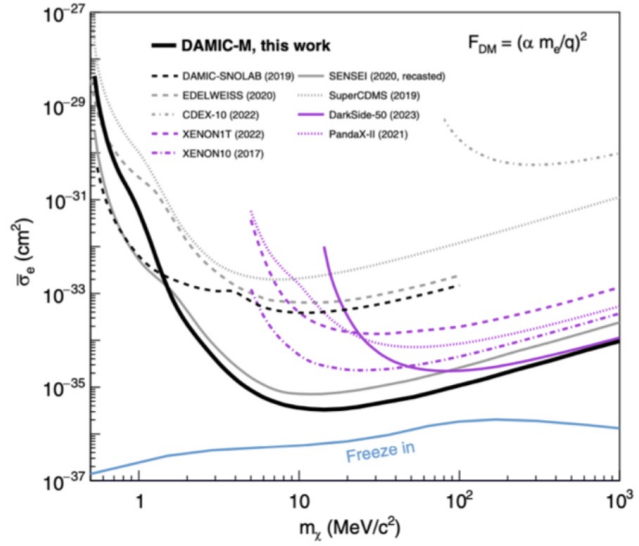
Phys. Rev. Lett. 130, 171003 (2023)

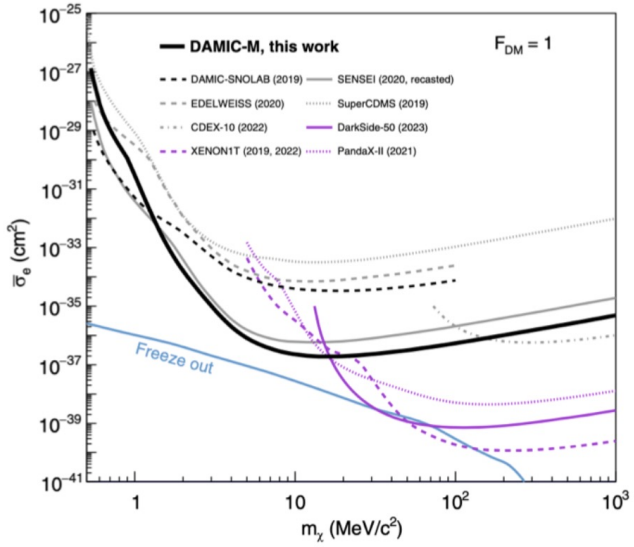
Search for Daily Modulation of MeV Dark Matter Signals with DAMIC-M

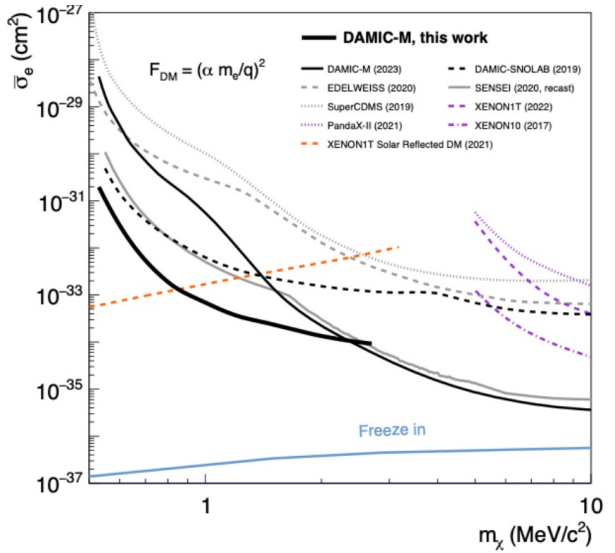
Phys. Rev. Lett. 132, 101006 (2024)

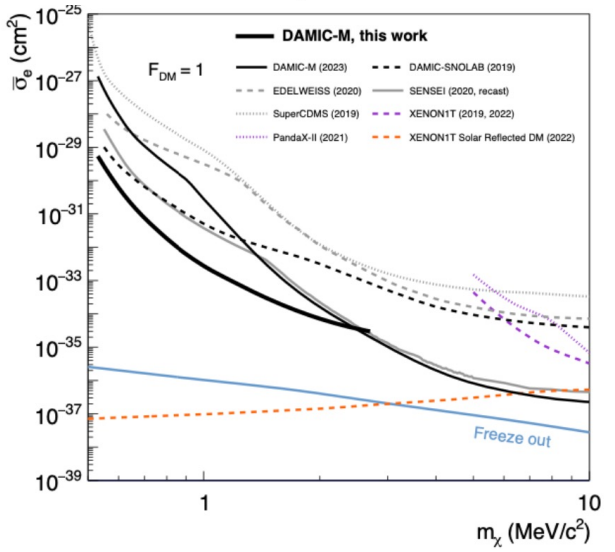










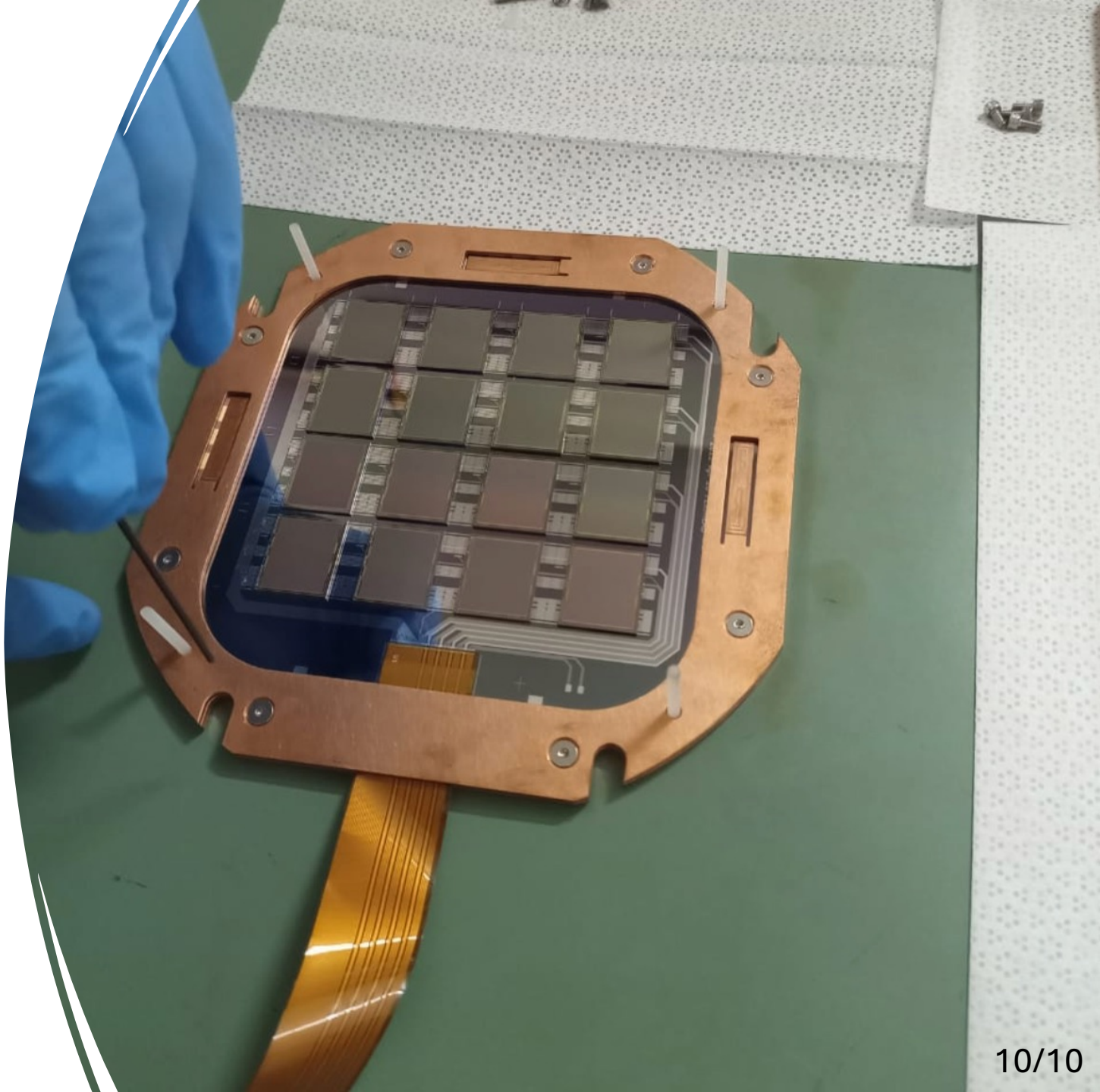


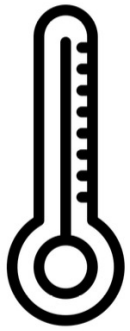
Au LPNHE

- Banc de test complet de l'électronique en salle blanche (DAQ – module CCD)
- Électronique (hardware, firmware)
- DAQ
- Analyse de données
- Simulations
- (service après-vente à Modane)

Projection à court et moyen terme

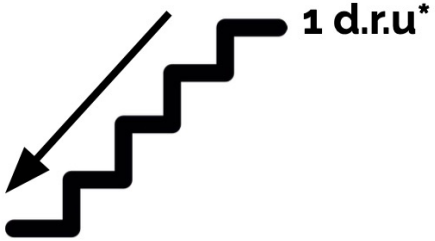
- DAMIC-M
- OSCURA
- DESI-2
- Autres projets (interaction cohérente neutrino-noyau, DARKNESS, particule millichargées…)
- Nouveaux détecteurs (Skipper CCD bifaces, Détecteurs 3D…)





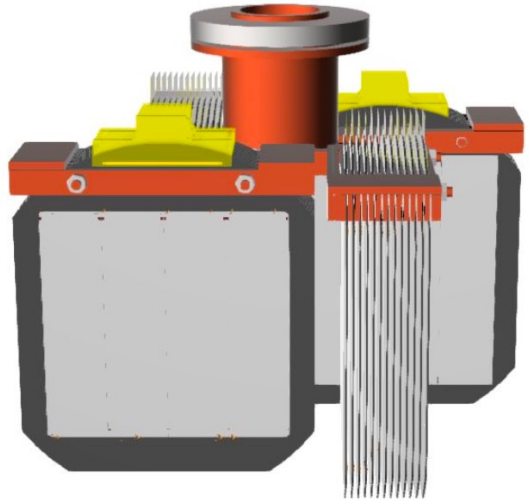
~100 K

Temperature



Background Level
O(0.1) d.ru

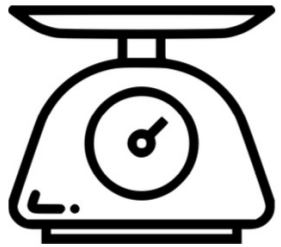
DAMIC-M CCD stack



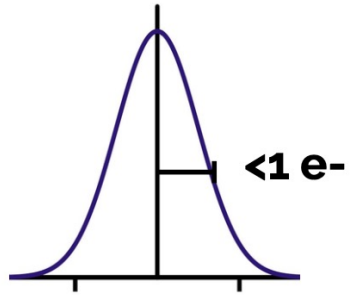
~200 SKIPPER CCDs

6000 pix x 1500 pix

~1 kg



Sensitive Mass



Resolution (readout noise)
~0.1 eV

Début 2025: 13 modules
Printemps 2025: 26 nouveaux modules
Fin 2025: 13 derniers modules