

ENIGMASS+ : Assemblée Générale 2025

Céline Combet et Thibault Guillemain

LAPP, 7 novembre 2025

Welcome and thank you

- Welcome to ENIGMASS+ General Assembly n° 2
- Thank you to the working group conveners for the preparation of the science sessions and highlights
- Thank you to Corinne Feullar and Sophie Lieunard for the help with the logistics

Enigmass+ : federation and LABEX



INSU, UGA

~10 permanent scientists



IN2P3, UGA

~ 45 permanent scientists



IN2P3, USMB

~ 40 permanent scientists



INP, (IN2P3), USMB

~15 permanent scientists

Survey coming soon to update these numbers

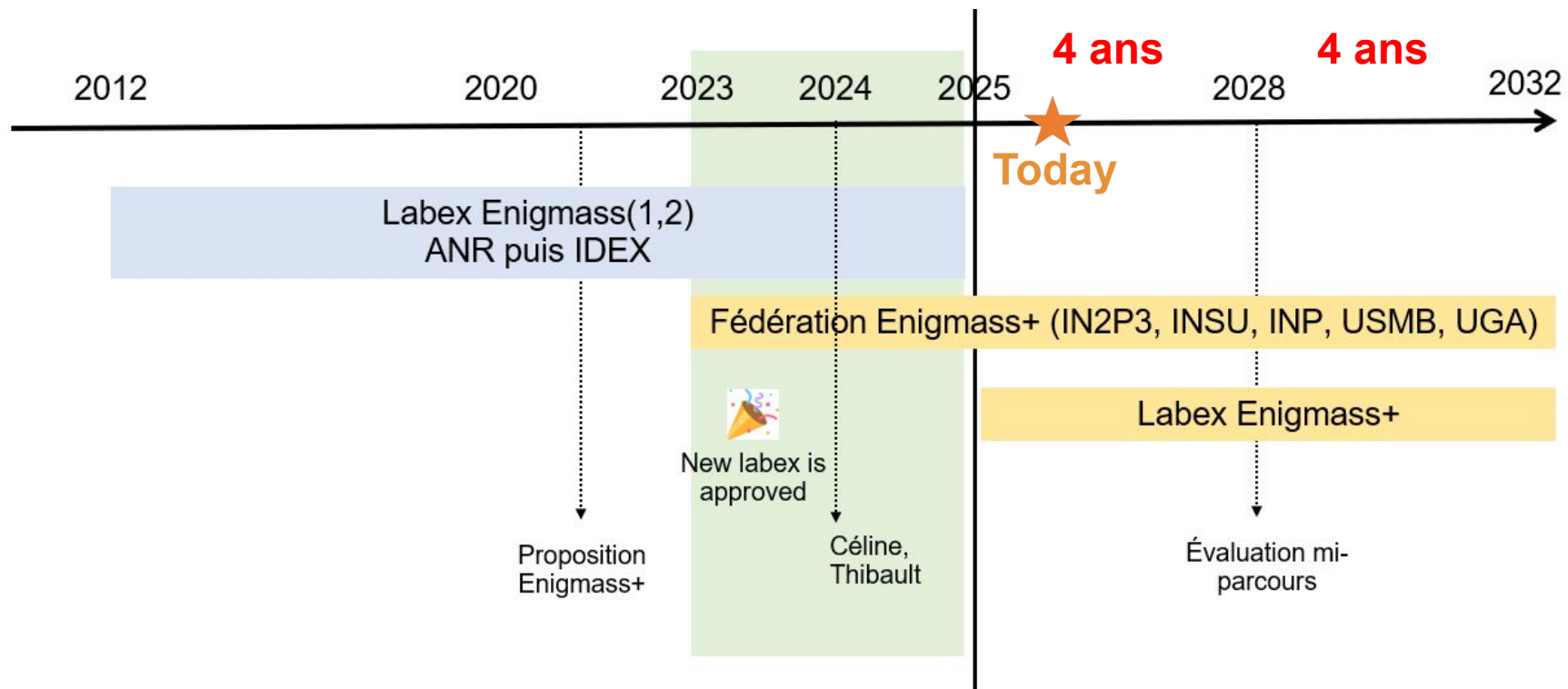
The federation

- formalises the past collaboration of the 3 "historic" labs and the new one with IPAG
- provides a co-funding framework between CNRS, UGA (labex) and USMB
- re-inforces the national visibility of our labs/activities
- facilitates/encourages collaboration between Enigmass+ members

Direction: Céline Combet, Thibault Guillemin (Johana Paquien - assistante pilotage. Thank you!)

The Enigmass+ federation and labex financial administration is **hosted at LPSC** (Thank you Cécile Vannier!).

Enigmass+ : federation and LABEX



ENIGMASS+ organization

- Comité de pilotage : CNRS (IN2P3, INP, INSU), UGA, USMB
- Direction : C. Combet, T. Guillemin (direction) + J. Paquien (assist. pilotage du projet)
- Comité des DUs: L. Derome (LPSC), G. Dubus (IPAG), B. Herrmann (LAPTh), G. Lamana (LAPP)
- Scientific Advisory Board (see next slides)
- Coordination team (see next slides)

Enigmass+ coordination team

**WP1 - Elementary particles and
the search for new physics**

**Cédric Delaunay (LAPTh)
Jean-Baptiste de Vivie (LPSC)**

**WP2 - Extreme phenomena in the
Universe**

**Sami Caroff (LAPP)
Benoît Cerutti (IPAG)**

**WP3 - Dark matter, dark energy,
inflation**

**Francesca Calore (LAPTh)
Laurence Perotto (LPSC)**

Training, visitors

Place vacante

Outreach, communication

Laura Zambelli (LAPP)

Thanks to Benoit Clément

Science Advisory Board

We have recently finished to build our Science Advisory Board!

- Freya Bleckman (DESY, Hamburg)
CMS, FCC

- Valentina De Romeri (University of Valencia)
Theory (new physics in the neutrino sector,
dark matter models)

- Ken Ganga (APC, Paris)
Euclid, CMB

- Brian Reville (MPI, Heidelberg)
High energy cosmic rays, plasma experiment at
CERN

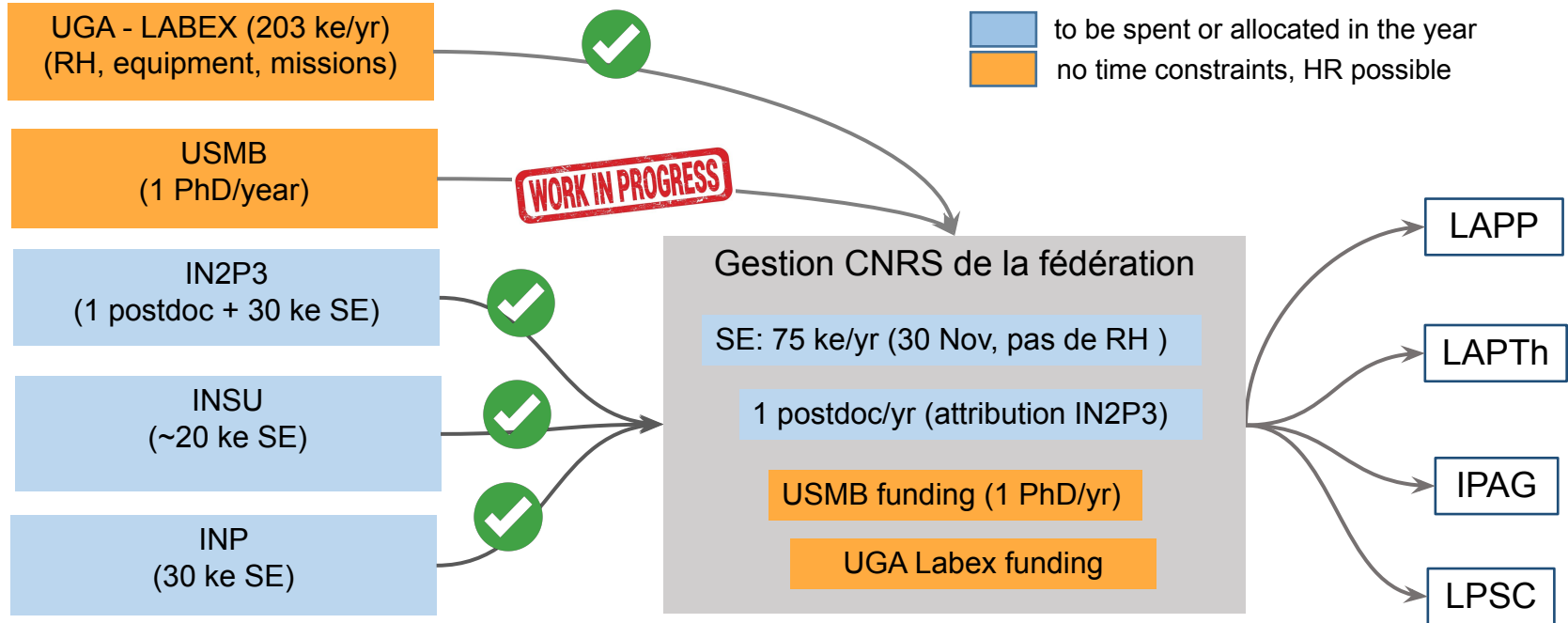


Conseil scientifique externe

- Composé de personnalités scientifiques extérieures à l'UGA et au LabEx, dont une part significative d'étrangers, il élit un président ou une présidente en son sein.
- Le comité scientifique externe est destinataire des rapports annuels du LabEx et de tout document en lien avec l'activité du LabEx qu'il souhaite avoir.
- Le SAB se réunit au moins une fois tous les deux ans, et pour la première fois en juin 2025 au plus tard.
- Il peut être saisi par le comité des tutelles de toute question stratégique concernant le LabEx.
- Le SAB évalue la stratégie du LabEx, ainsi que sa production scientifique et technologique.
- Suite à chacune de ses réunions, il rédige un rapport sur la stratégie et les réalisations du LabEx.

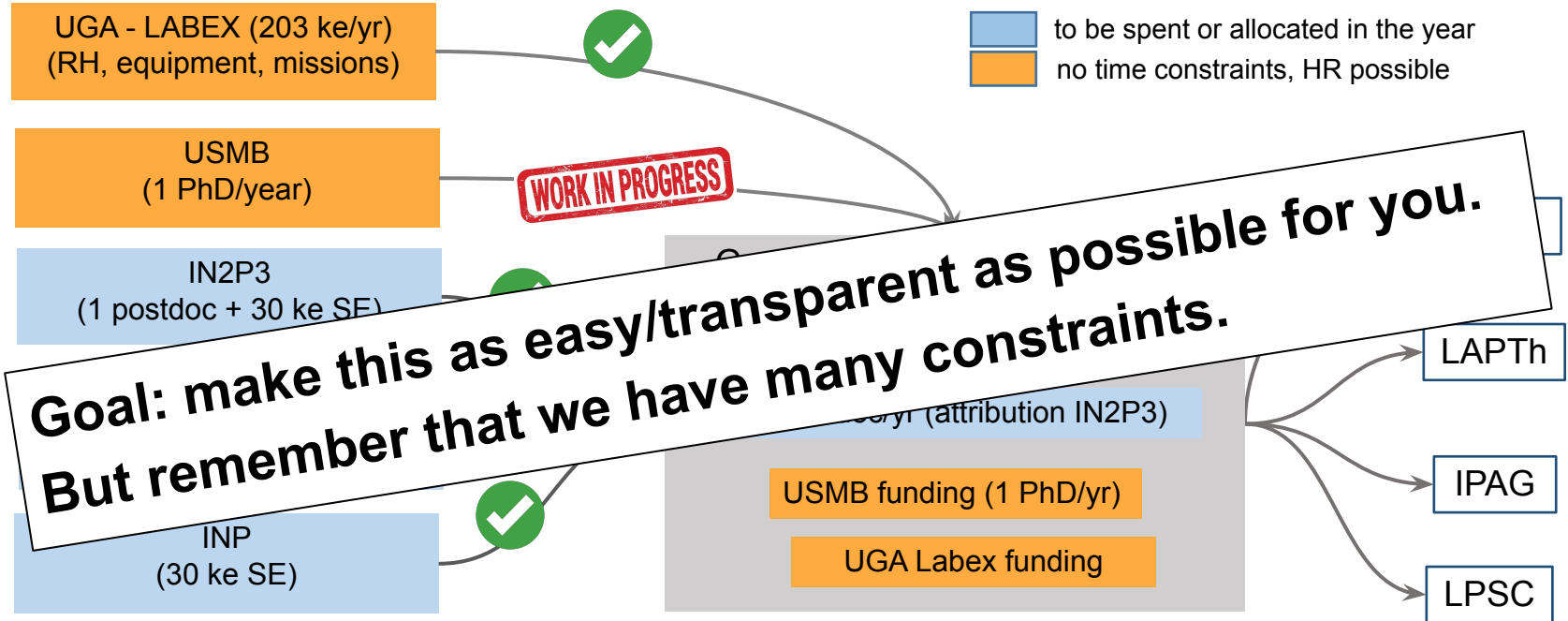
Enigmass+ budget

Total budget total: ~520 keuros/year



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2025: human resources

Theses

- *Comagnetometry and systematic effects to the neutron electric dipole moment measurement*
Benoit Clément et Stéphanie Roccia, WP1, LPSC
- *Measurement of Double Higgs Boson Production in the $b\bar{b}\gamma$ Channel with the ATLAS Experiment Using Run 2 and Run 3 Data*
Marco Delmastro, WP1, LAPP

Postdocs

- *Unveiling GRBs with LST-1 and the future LST2-4 telescope at very high energy*
David Sanchez, LAPP, WP2
- *Detecting and characterizing the population of old pulsars in the Galactic bulge*
Maïca Clavel, IPAG, WP2

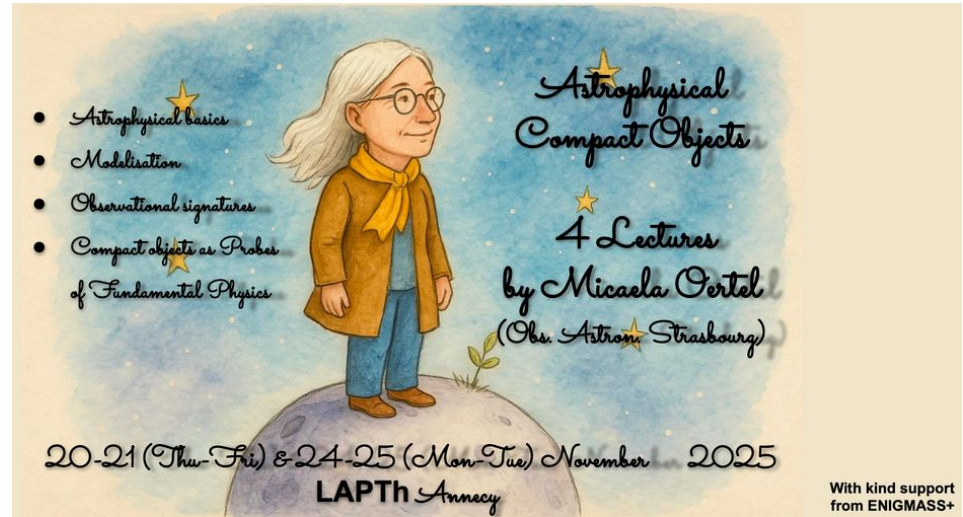
Flash talks coming

2025: visitors, R&D, events call

- R&D
 - 2 booster projects
 - 2 mid-size projects
- Local workshops: 4 events
- Visitors :1 (much fewer proposals than in 2024)

2025: training

- GRASPA school
Great success again
30 students (65 applications)
- Lecture series at LAPTh by
Micaela Oertel :
Astrophysical Compact Objects
<https://indico.in2p3.fr/event/37568/>
- Master 2
2025: no internship funded ('administrative' issues)
2026: the goal is to fund 10 internships (4 months)



RH project call 2026

Thesis & Postdoc call:

- Closed October 31st
- 18 propositions submitted: 5 theses, 13 postdocs
- November: contacting experts for reviews
- Results early February
- Goal: 4 contracts

IRGA PhD project call 2026

IRGA (Initiatives de Recherche Grenoble Alpes) PhD call about to be released



Vous ne pouvez pas soumettre de manière parallèle un projet identique à un autre dispositif de financement UGA (LABEX, etc.).

Recommendation for this year, discussed with PAGE:
it is allowed to submit to both calls (IRGA and ENIGMASS+).
Selection criteria are slightly different.

Visitors, R&D, events project call 2026

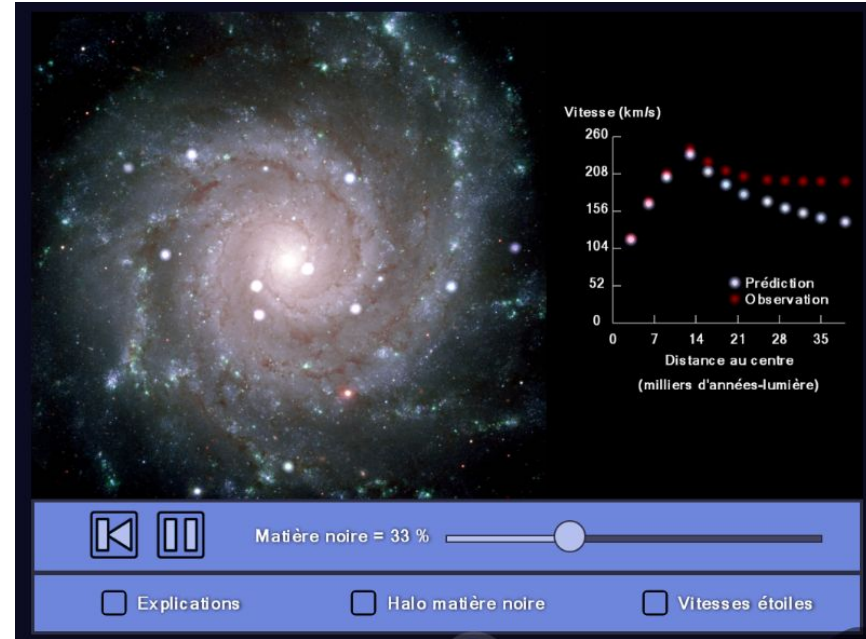
- Call for visitors, R&D projects, local events
 - Visitors (max 3.5 keuros)
 - 'Small' R&D
 - Local workshops/conferences (max 2 keuros)

N.B : total budget call probably reduced because of M2 internship funding

- Calendar:
 - Open in January (TBC)
 - Results ~mid-February (TBC)

Outreach

- Repair of the webdoc :
<https://lamatierenoire.in2p3.fr>
- Inventory of the available partially-ENIGMASS outreach material : cosmic VR, pedagogical briefcases, etc.
- Still the plan to have one 'big' outreach action over the 4 years (10 keuros budget)
⇒ Please contact Laura Zambelli



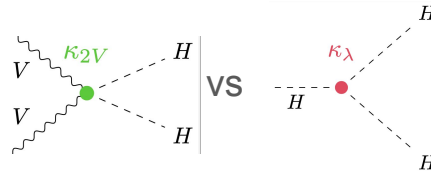
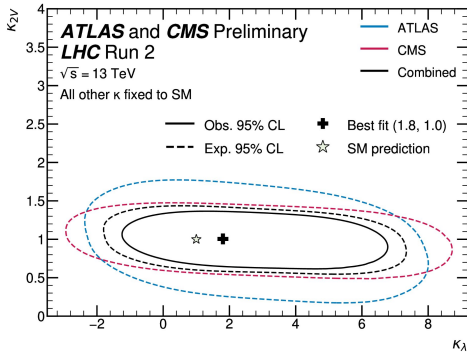
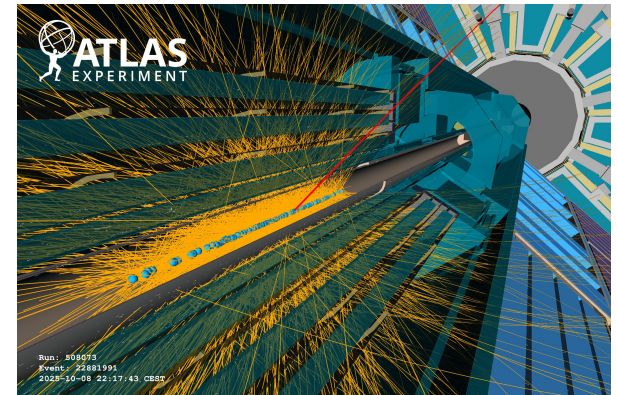
New things

- Workshop Doctorant(e)s / Post-doctorant(e)s des laboratoires ENIGMASS+
⇒ Talk of Nathan Amouroux coming
- Organisation of 1 thematic day per year?
One day on a focused topic with ~10-15 persons from different labs, to explore possible collaborations
- Suggestions always welcome; talk to us and to the WP coordinators!

WP1 : some 2025 highlights (1/2)

- Magnifiques performances du LHC
 - LHC a dépassé les 500 fb-1 délivrés pour ATLAS et CMS (318 fb-1 @ 13.6 TeV)
 - LHCb a enregistré 3.8x plus de données au Run 3 qu'au Run 2
 - Collisions O-O, Ne-Ne
 - Tests à haute intensité : # interactions pp / croisement $\mu \sim 150$ (~ attendu HL-LHC)
- Progrès vers l'observation de l'auto-couplage du boson de Higgs
 - Combinaison ATLAS+CMS Run 2 : $\kappa_s/\kappa_{sSM} = 0.8 \pm 0.8$ ($\sigma \sim 1.1$)

92 vertex d'interactions pp reconstruits

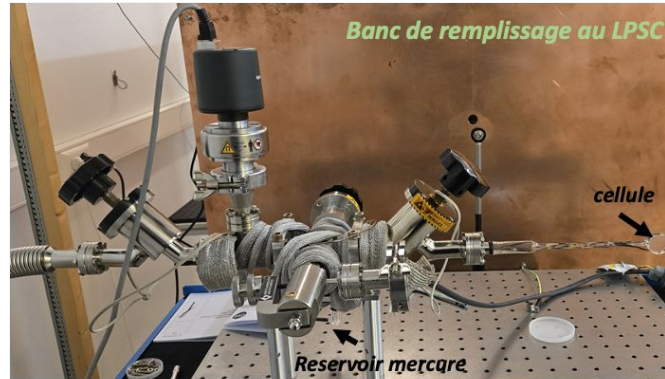


Malheureusement ~ compatible avec le Modèle Standard pour le moment...

- Analyses Run 3 en cours, bien plus performantes... Évidence par ATLAS+CMS à la fin du Run 3 ?

WP1 : some 2025 highlights (2/2)

- UCN :
Construction d'un **banc de remplissage de cellules de ^{199}Hg** pour la pour la stabilisation en fréquence du laser UV de PSI, pour la magnétométrie de n2EDM. (crédits ENIGMASS+)



- Theory events supported by Enigmass+
 - Rencontres de Physique des Particules (RPP) at LAPTh (Feb 5 → 7)
 - Physics of the TeV Scale and Beyond the Standard Model (PHYSTEV) Workshop in Les Houches (June 16 → July 4)

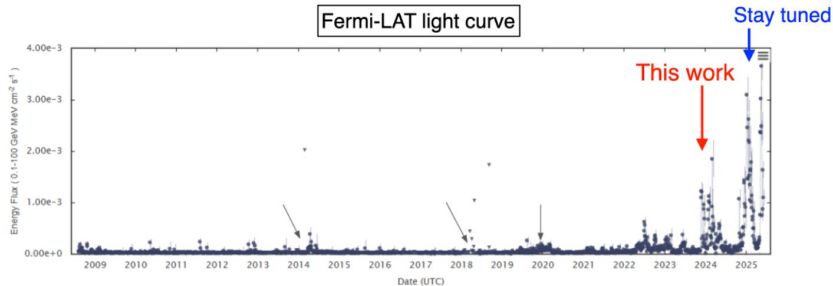
WP2 : some 2025 highlights (1/2)

Progress in CTAO North site construction

- All structures ready for cameras
- Camera installed on LST4 and first drive tests
- Inauguration Oct 2026



- OP313 the furthest blazar detected by LST1 ($z=0.997$)



- LIGO-Virgo-KAGRA Collaboration released the first set of results from their fourth observing run (cf **Alba's talk**)
- First Combination of IACT data for Lorentz Invariance Violation shown at ICRC (**Cyann Plard - Enigmass Funded**)

WP2 : some 2025 highlights (2/2)

ANR PROPULSING



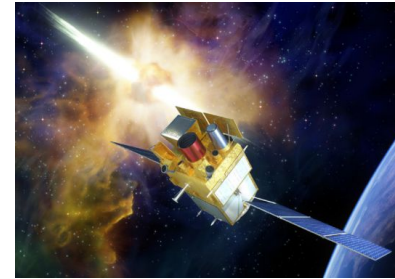
"Probing old pulsars in the Galactic bulge" (2026-2030, PI: F. Calore)

4 laboratories involved, including 3 Enigmass+ labs (IPAG, LAPTh & LAPP) + LPC2E (Orléans)

Objective: Search for new millisecond pulsars, population studies and high-energy radiation modeling to better constrain their contribution in the *Fermi* (GeV) and CTAO (TeV) bands.

X-ray astronomy

SVOM Sino-French mission launched in June 2024 dedicated to gamma-ray bursts and the transient sky (IR, Opt., X, γ).
=> 2 Co-I @ IPAG (M. Clavel, P.-O. Petrucci)



WP3 : some 2025 highlights (1/2)

Cosmology & Dark Energy

- Vera C. Rubin Observatory
 - First light! Successful public events at LAPP and LPSC
- Euclid
 - [Quick Data Release](#) (Q1), 77 publications with LPSC contribution
- NIKA2
 - End of the Guaranteed-Time Large Programs (LPSZ, N2CLS): Final publications and Public Data Release
- Theory
 - [Strings & Cosmology Meeting](#) in December at LAPTH
 - 1 ANR PRC (D. Andriot) and 1 ANR PRCI (A. Moradinezhad, DFG)



Rubin image of the Virgo Cluster

WP3 : some 2025 highlights (2/2)

Dark Matter

- New signatures of dark matter in astrophysics ([primordial BHs](#), [sub-GeV dark matter](#))
- Direct dark matter detection
 - Finalization of cryogenic platform at LPSC: clean room for the TES4DM cryostat installed and ready at LPSC



Cleanroom at LPSC

Plan for today

Before lunch

- 2 focus presentations (workshop, Ricochet)
- WP 2 session

Lunchtime

- Group photo, on the stairs in front of the lab
- Buffet in the Grande Galerie

Afternoon

- WP3 session
- Coffee break
- WP1 session

Enjoy 10 nice science talks !