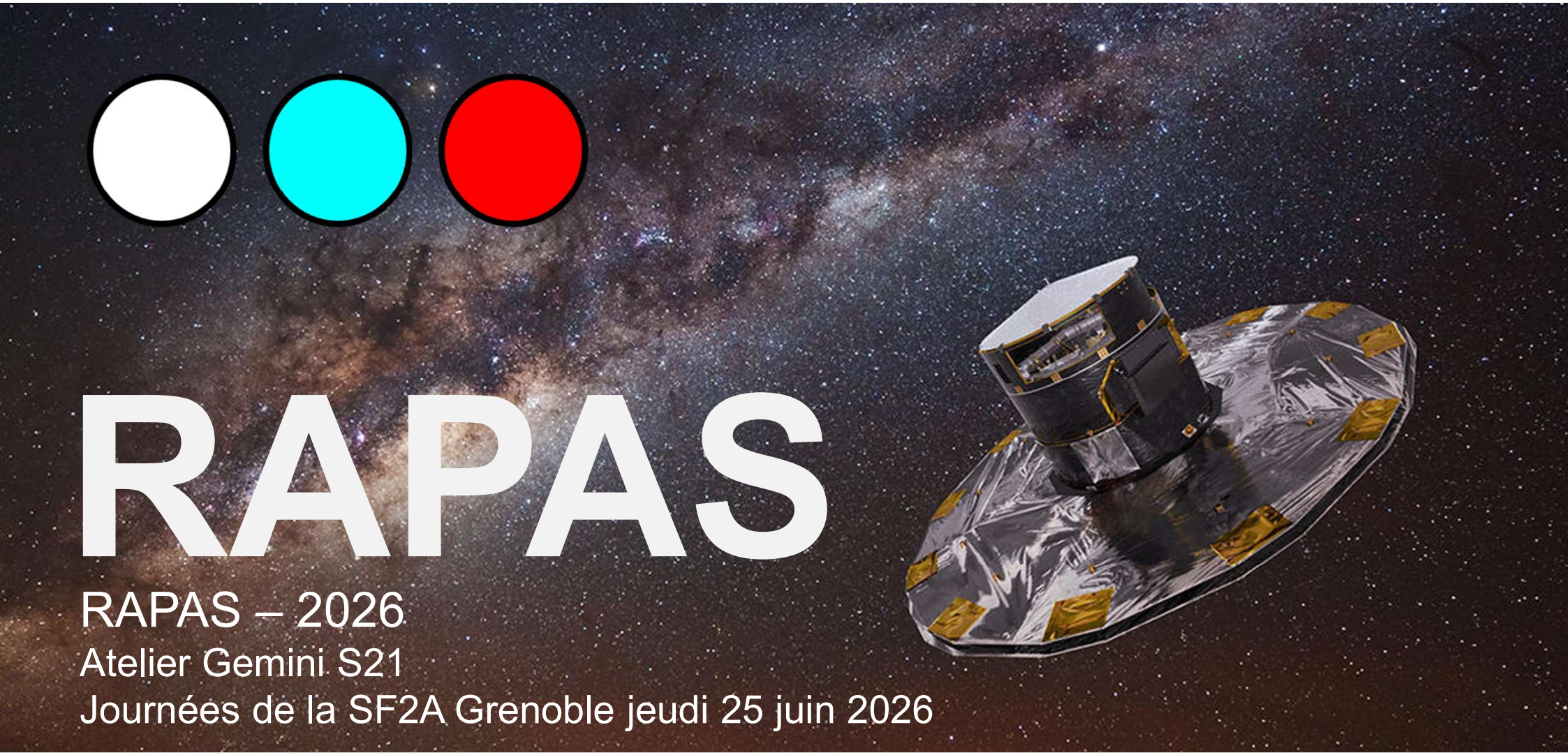


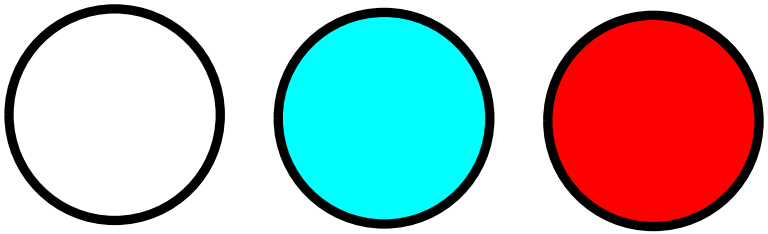
RAPAS

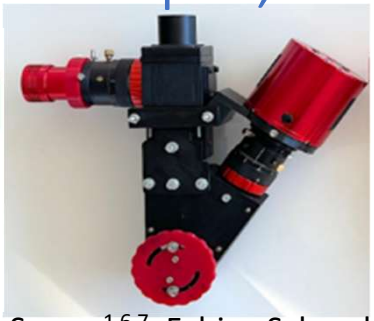
RAPAS – 2026

Atelier Gemini S21

Journées de la SF2A Grenoble jeudi 25 juin 2026

RAPAS : Réseau Amateur Professionnel pour les Alertes Scientifiques, a Pro-Am project





Thierry Midavaine[1 2], William Thuillot[3], Michel Dennefeld[4], Christian Buil[5], Stéphane Neveu[1], Marc Serrau[1 6 7], Fabian Schussler[8], Paul Amiot[9 10], Pascal André[1 11], Éric Barbotin[12], Pierre Barroy[7 13], Pierre-Michel Bergé[11], Guillaume Biesse[11], Christophe Boussin[10], Gilles Bouttard[10], Vincent Bouttard[10], David Bregou[11], Rémi Cabanac[9 10], Philippe Cétier[15], Thibaut Cours[10], Sébastien Crétier[7], Yannick Delisle[7], Fred Denjean[1 14], Jean-Louis Dumont[15], Philippe Dupouy[16], Tanguy Dusserre[9 10], David Fardin[11], Jean-Noël Ferrier[17], Olivier Garde[18], Jean-Paul Godard[19], Pascal Goumard[1 2 20], Erik Guthleben[11], Roger Hellot[21 22], Michael Irzyk[7], Cédric Latgé[1 11], Christine Laulhere[1], Pierre-Yves Lechapelain[23], Arnaud Leroy[7 10 19 24], Jean-Marie Lopez[25], Florent Losse[26], Elisabeth Maris[27], Jean-Baptiste Marquette[1 28], Patrick Martinez[1 11], Pierre Mazet[11], Pierre-Jean Mercier[15], Frédéric Paillet[11], Christian Pantacchini[29], Jérôme Paufique[30], Michel Rieutord[9 10], Pier-Francesco Rocci[7], Thomas Salomon[14], Christian Sartini[1 11], Renaud Savalle[3], Sébastien Serpaud[11], Bernard Tregon[31], Jean-Michel Vienney[7], Jean-Pascal Vignes[32], Gabriel Vilain[13], Jean-Marie Vugnon[1 2 19], Anaël Wünsche[33]

1 Société astronomique de France (SAF)
2 Club Eclipse
3 Observatoire de Paris LTE PSL univ
4 Institut d'Astrophysique de Paris (IAP)
5 ARAS AUDE
6 Dauban Grappa
7 TJMS Buthiers CPS Planète Sciences
8 CEA IRFU Astro-COLIBRI
9 Observatoire Midi Pyrénées (OMP)
10 AT60
11 ADAGIO Observatoire de Belesta
12 Astroclub Charentais
13 Université de Picardie Jules Verne
14 Astronomie Gironde 33
15 Société Astronomique de Touraine (SAT)
16 Observatoire de Dax
17 Escalier aux Etoiles
18 2SPOT
19 Uranoscope de l'Ile de France
20 SADR
21 Observatoire Rosheim-TRBL
22 AITP Chili
23 Observatoire de Bretagne Sud
24 Madagascar
25 Observatoire des Pises
26 Observatoire Saint Pardon de Conques
27 CEPHEE73
28 SF2A
29 Observatoire de Benayes
30 ESO
31 Obs du Clocher de Brantôme en Périgor
32 Deep Sky Chile
33 Observatoire des Baronnies Provençales

Le Réseau Amateurs Professionnels pour les Alertes Scientifiques (RAPAS)
Amateurs-Professionnals Network for Scientific Alerts

RAPAS project is building a french professional - amateur network to answer to a selected list of alerts

- 2022 RAPAS first funding from API Observatoire de Paris (First batch of RAPAS filters)
- More than 100 registered observers and telescopes,
- We deliver to 50 observers a set of 3 ABC (RAPAS G, Gbp, Grp) filters to unify the photometric data delivered in using Gaia catalog with G, Gbp and Grp photometric system.
- We designed 2 new high sensitivity - low resolution spectrographs
- Some telescopes are testing spectrograph prototypes, to assess the range of magnitudes and Resolutions to deliver alert SED (Spectral Energy Distribution)

- In 2023 a partnership with Astro-COLIBRI is started to provide functionalities and a process to feed RAPAS with alert selection updated every week.
- Assess the photometric accuracy of the network along 2023 and 2024 and start to react to Astro-COLIBRI selected alerts
- In 2024 we started to provide photometric monitoring collected on RAPAS Spreadsheeets, and observers are jnvited to join KNC and BHTOM
- In 2025 RAPAS training 1 at OHP and we released Circulars for SSO to MPC and IAWN, for GRBs to GCN, and for SN to TNS
- In 2026 Two Photometric pipelines is proposed to the network : PPR and StdWeb, in addition SED are released for some alerts in PADC facility to up load FITS files. RAPAS training 2 at OHP

Scientific Council of Paris Observatory : API (Action Pluri-annuelle Incitative ProAm)

The Scientific Council of Paris Observatory launched a call for proposal for three years : AIP (Action PluriAnnuel Incitative ProAm) 2022 – 2023 – 2024 - extended in 2025) where RAPAS project is an API selection each years

- 2022 funding the first step :
  - the manufacturing of a first batch of 25 filters sets
  - Kick off workshop and foundation of the RAPAS network 8-9 October 2022
- 2023 funding the second step :
  - realization of 2 spectrograph prototypes (low dispersion and high limiting mag) to record SED
  - Workshop 2, photometric test feedbacks, spectro design, toward 2024 (25-26 nov 2023)
- 2024 funding a third step with an additional private donation :
  - Astro-COLIBRI alerts filtering for the RAPAS network capabilities
  - 2nd batch of RAPAS 30 filters with the support of a donation including orders from Pro Observatories
  - Workshop 3 scheduled on the 14th and 15th of december 2024 at Paris Observatory
- 2025 funding a fourth step
  - A Master 2 internship awarded to Martin Grandidiier at Jules Vernes University Amiens for an improved design of the filter multilayer coating
  - A training session for RAPAS Observers at OHP 22-26 Aug 2025 with T120 and T80, to consolidate processing pipeline
- 2026 funding à fifth step
  - A training session #2 for RAPAS Observers at OHP to consolidate processing pipeline with T120 and PADC RAPAS facility
- The French RAPAS network is answering to alerts and deliver data. GCN and TNS circular are released
- On the way to an international network ?

More and more transient events are released where amateurs could provide monitoring and classification

1. Solar System Objects (SSO) : beyond Gaia-fun-SSO alerts are still running :

- GaiaMOONS program : Asteroids with satellite candidates are targets to track and monitor CDL
- NEA and PHA alerts from MPC NEO toconfirmand the Near-Earth Objects Coordination Center from ESA
- IAWN (International Asteroid Warning Network) for potential hazardous objects
- Target magnitude class is 20 and beyond to keep on track on the nights following the discovery in retrieval fields from 10 to 30 arcmin

2. Optical (UV, Vis, IR) Galactic or extragalactic alerts : Transient Alert to classify, Novae, SN monitoring (from new rising sources or from strong photometric variations) :

- Eruptive stars, Cataclysmic's, Novae, SN, SLSN, TDE, LFBOT, Blazars, gravitational lensing (BH-TOM2),…
- Alert detections from : (Gaia 2016-2025), ZTF, ASSAS-SN, ATLAS, CRTS, GOTO, LAST, …
- Through 2026 starting of LSST Vera Rubin 10 million alerts/y (unable to follow alerts <mag 17)

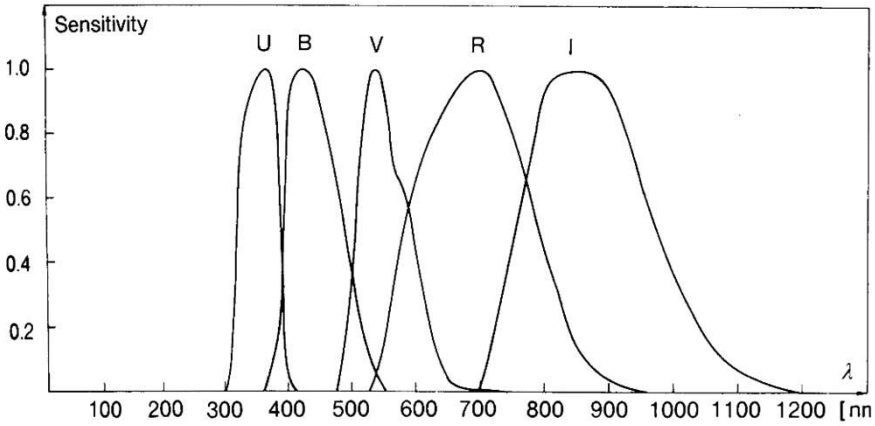
3. Multimessenger Astronomy alerts : discover the optical counter part, then characterize its optical signature, then perform the monitoring **(GRANDMA - KNC, ACME)** :

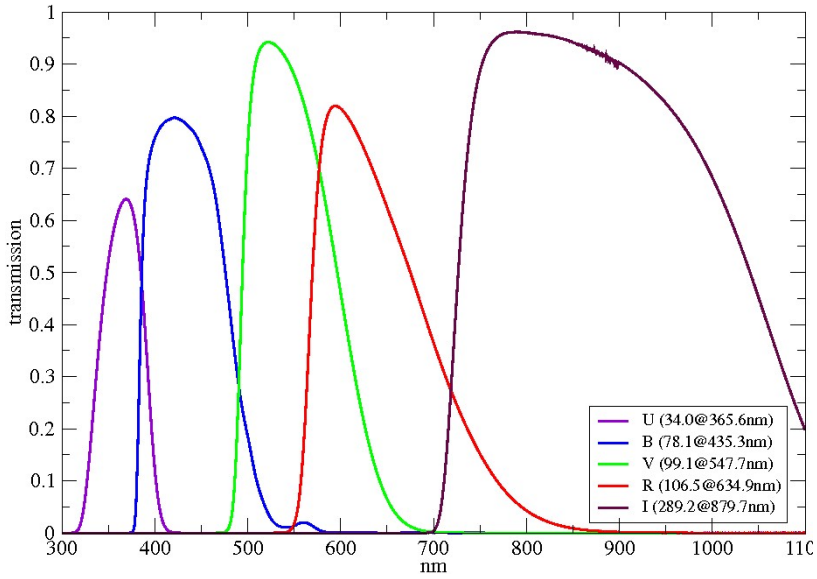
- GW (Gravitational waves detection) — LIGO, VIRGO, KAGRA (GrandMa and KNC)
- Neutrinos, Cosmic Rays — Ice Cube, ANTARES, HESS, …
- GRB (Gamma Ray Burst) and X ray signals — Fermi, Swift, SVOM, …
- FRB (Fast Radio Burst) — LOFAR, SKA, MeerKAT, …

These alert designations have a poor accuracies > from several arc min to several 1°

Discrepancies between photometric filters and related ref star photometric catalogs

- From Johnson and Cousins U B V R I J K L M N...

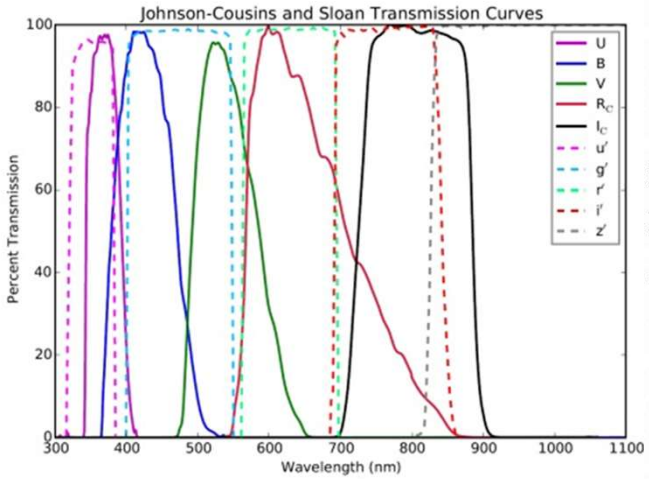


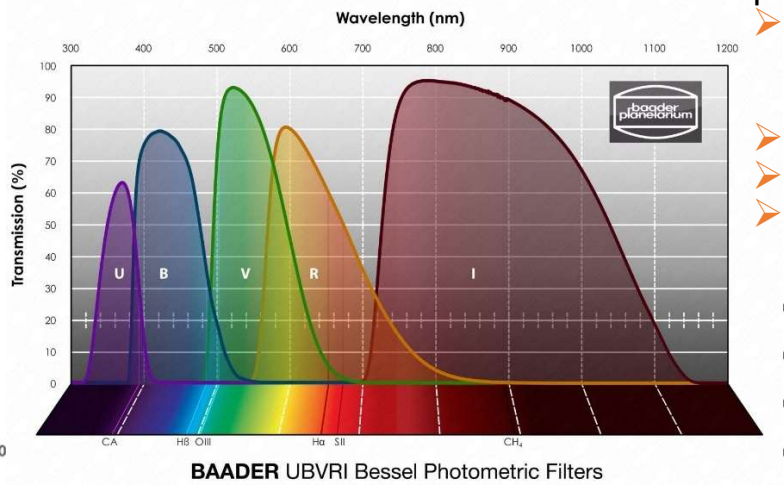


Filter Letter	Effective Wavelength Midpoint λ_{eff} For Standard Filter[2]	Full Width Half Maximum[2] (Bandwidth $\Delta\lambda$)	Variant(s)	Description
Ultraviolet				
U	365 nm	66 nm	u, u', u*	"U" stands for ultraviolet.
Visible				
B	445 nm	94 nm	b	"B" stands for blue.
V	551 nm	88 nm	v, v'	"V" stands for visual.
G			g, g'	"G" stands for green (visual).
R	658 nm	138 nm	r, r', R', R_c, R_e, R_j	"R" stands for red.
Near-Infrared				
I	806 nm	149 nm	i, i', I_c, I_e, I_j	"I" stands for infrared.
Z	900 nm[3]		z, z'	
Y	1020 nm	120 nm	y	
J	1220 nm	213 nm	J', J_s	
H	1630 nm	307 nm		
K	2190 nm	390 nm	K Continuum, K', K_s, K_{long}, K^8, nbK	
L	3450 nm	472 nm	L', nbL'	
Mid-Infrared				
M	4750 nm	460 nm	M', nbM	
N	10500 nm	2500 nm		
Q	21000 nm[4]	5800 nm[4]	Q'	

Set of optical filters used by professional or amateur observers

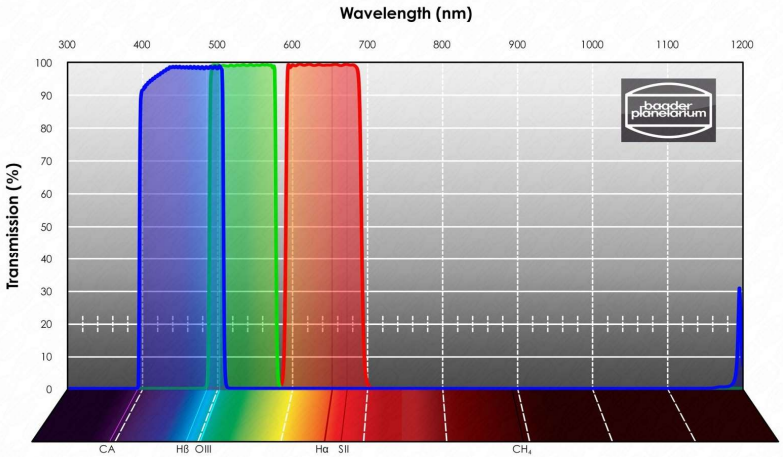
- UBVRI Johnson Cousins, Bessel, Sloan, RGB



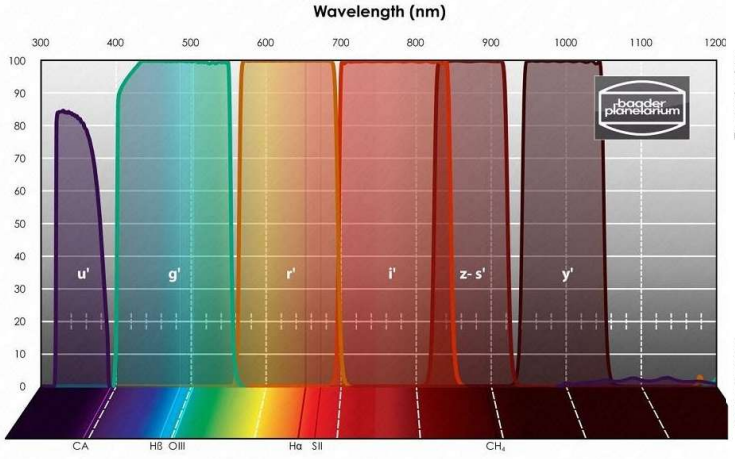


BAADER UBVRI Bessel Photometric Filters

Fig. 4. Astrodon transmission curves for the Johnson-Cousins ($UBVR_CI_C$) and the Sloan ($u'g'r'i'z'$) photometric systems.



BAADER RGB CMOS Filter – *CMOS-optimized*



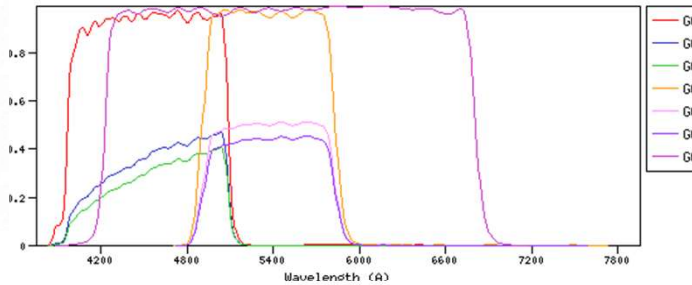
BAADER SLOAN/SDSS (ugriz') Photometric Filters

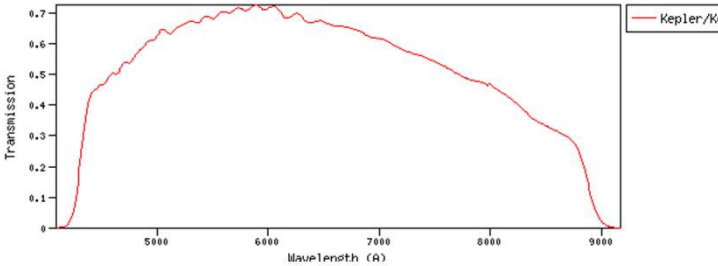
Wide band filters designed for new programs :

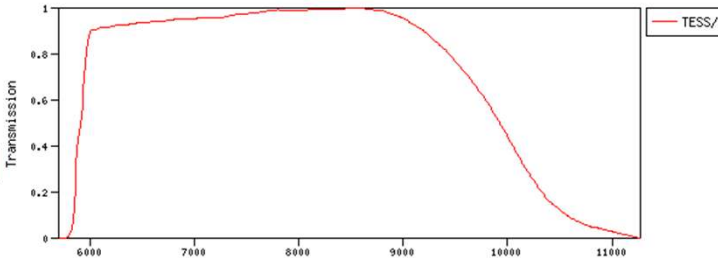
- ATLAS

Filter name	Bandpass [nm]	m1 [AB]	sky [AB/"²]	m5σ [AB]
'cyan'	420-650	22.8	21.2	19.7
'orange'	560-820	23.2	20.4	19.7

- HATPI : 430-890nm
- GOTO
- Kepler, TESS,







The Gaia catalog opportunities

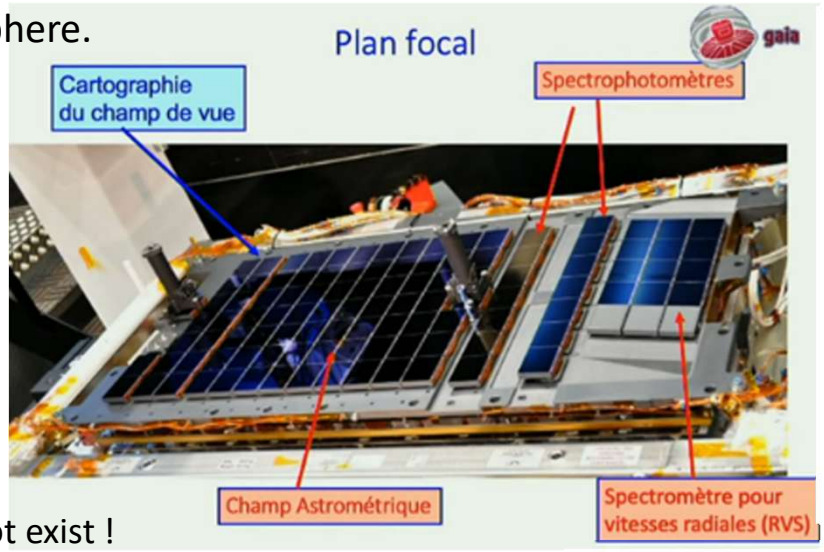
Gaia mission was delivering alerts up to january 2025 :

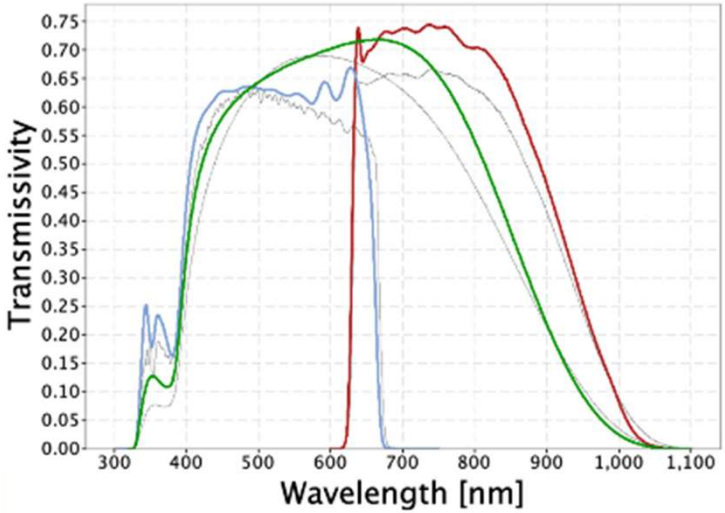
- https://gaiafunsso.imcce.fr/
- http://gsaweb.ast.cam.ac.uk/alerts/home

Gaia mission delivers astrometric and photometric catalogues 1,8 Giga objects up mag 20.7 in 3 bands G, 1,5 Giga objects in G_{BP} and G_{RP} outside the Earth atmosphere.

- Gaia DR1 2016
- Gaia DR2 (Grappa extract) 2018
- Gaia EDR3 (Grappa extract) 2020
- Gaia DR3 June 2022
- Gaia DR4 Dec. 2026 (2.8 10^9 objects)
- Gaia DR5-FR is scheduled in 2030
- …

The three Gaia related optical filters do not exist !





(Crédits ESA/Gaia/DPAC, P.Montegriffo, F. de Angeli, C. Cacciari)

The 3 Gaia photometric wide bands bring an enhanced SNR and magnitude upper limit for amateur telescopes. It allows direct photometric reduction with the G, Gbp and Grp Gaia catalog. Several Amateur softwares are used in the network :

- Prism V11 with Grappa (EDR3) Marc Serrau
- Muniwin
- AstroImage J and Gaia EDR3 via Vizier
- Siril 1.4
- Tycho Tracker 2025
- Astropy suite and STD pipe : RAPAS Photometric Pipeline and STD Web

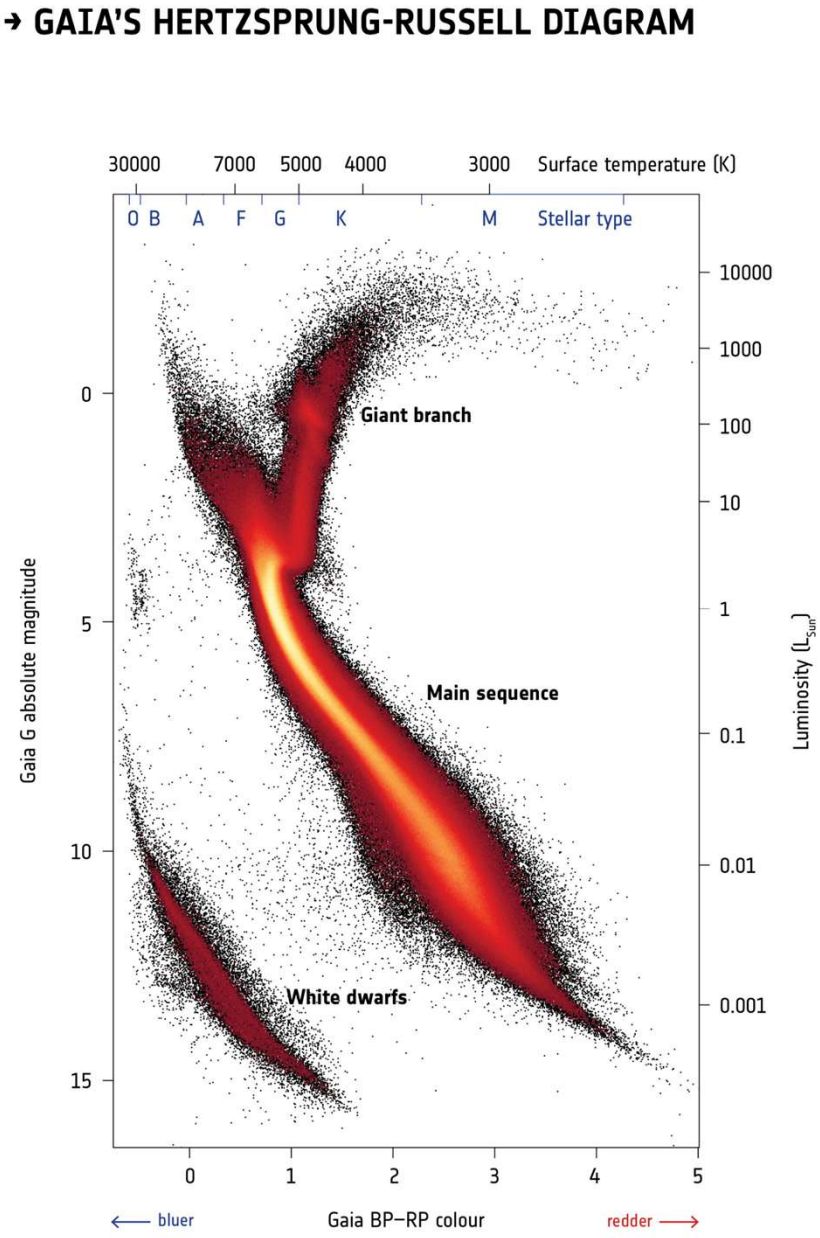
Gaia DR3 catalog accy

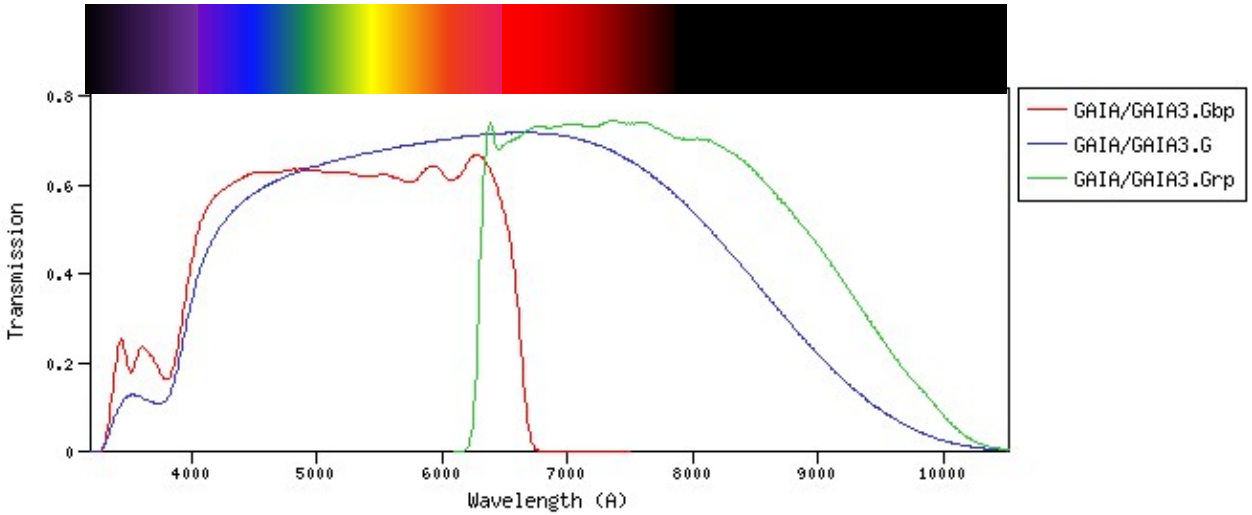
Photometry : G, G_{BP}, and G_{RP} published as part of Gaia EDR3, (other data are new in Gaia DR3)

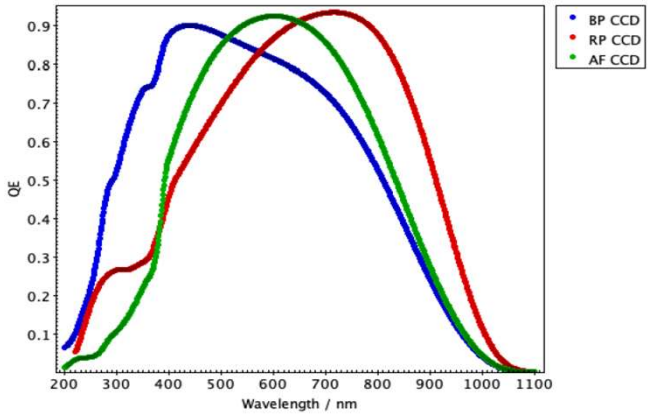
The G band is defined by the quantum efficiency of the CCD used for astrometry
The G_{BP} and G_{RP} bands are defined by the quantum efficiency of dedicated CCD with the prism spectrum and pixel binning of dedicated CCD for the 2 Gaia sub bands.

- The G-band photometric uncertainties are ~0.3 mmag for G<13, 1 mmag at G=17, and 6 mmag at G=20 mag.
- The GBP-band photometric uncertainties are ~0.9 mmag for G<13, 12 mmag at G=17, and 108 mmag at G=20 mag.
- The GRP-band photometric uncertainties are ~0.6 mmag for G<13, 6 mmag at G=17, and 52 mmag at G=20 mag.
- More information on the properties and limitations of the BP/RP spectra will be published closer to the release of Gaia DR3.

Gaia DR4 (25/07/2014 – 20/01/2020) will include lower level (epoch) products will be released on 02/12/2026 (400TB).



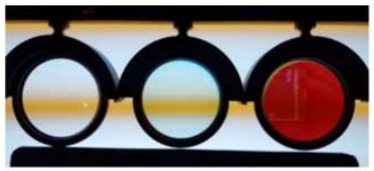




Filter ID	λref	λmean	λeff	λmin	λmax	Weff	ZPv	ZPλ .
GAIA/GAIA3.Gbp DR3	5109.71	5319.87	5035.75	3292.83	6738.11	2157.50	3552.01	4.08e-9
GAIA/GAIA3.G DR3	6217.59	6719.55	5822.39	3294.02	10301.96	4052.97	3228.75	2.5e-9
GAIA/GAIA3.Grp 7769.02	7939.10	7619.96	6196.05	10422.96	2924.44	2554.95	1.27e-9	

http://svo2.cab.inta-csic.es/svo/theory/fps3/index.php

The three RAPAS filters : A, B, C

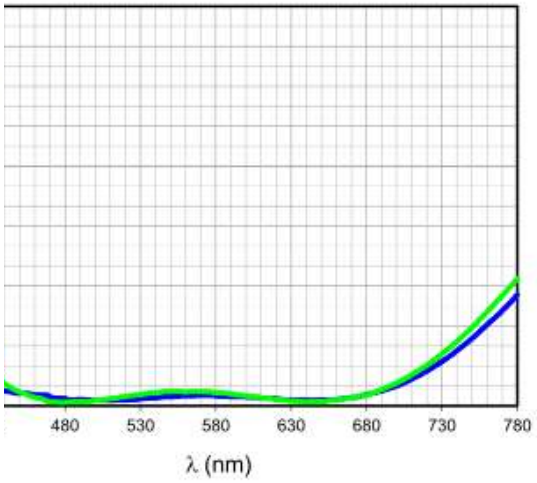


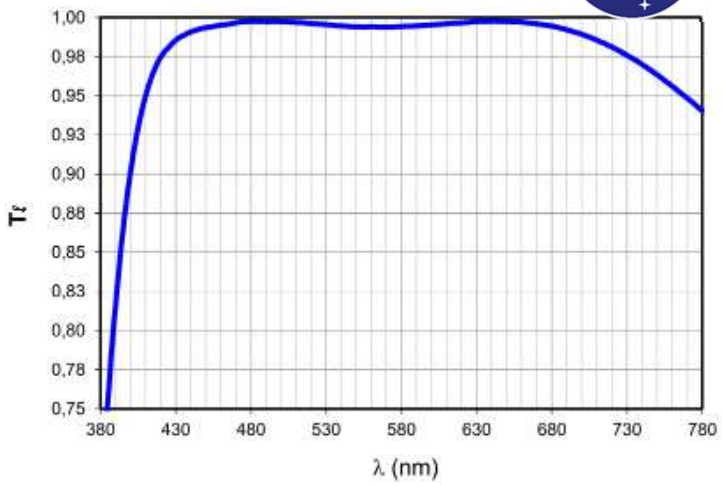
Pictures of the three filters A, B, C set : in 2022 a first batch of 25 filters set was released

- Packing
- Normal transmission
- Aspect angle transmission
- Reflexion

Getting the Gaia filters ?

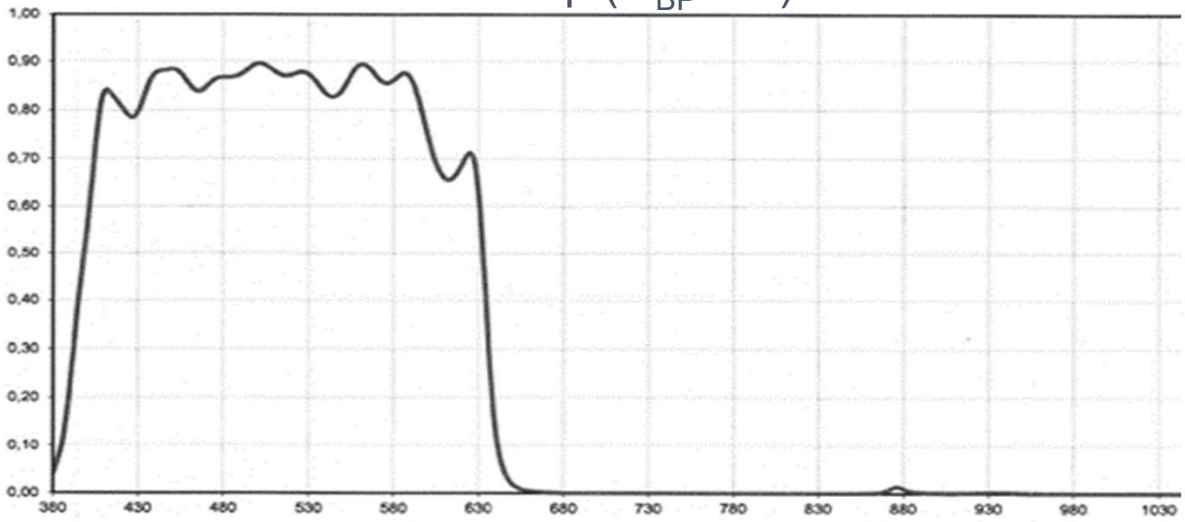
A filter RAPAS G (G like)



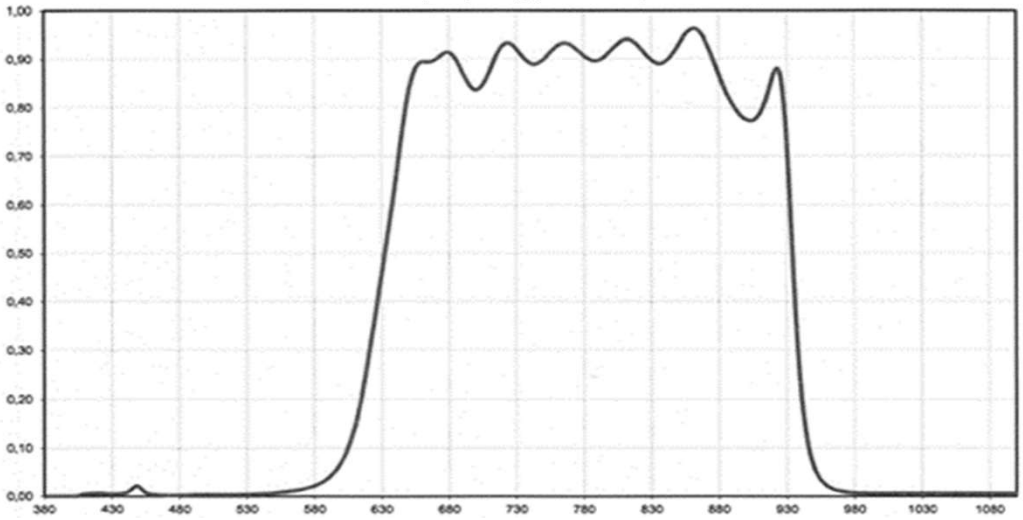


i = 5° mesure témoin n=1.51

B Filter RAPAS Gbp (G_{BP} like)



C filter RAPAS Grp (G_{RP} like)



L’arbitrage des filtres dans sa roue ?

Vous n’avez pas encore les filtres RAPAS que faire ?

- Faire des acquisitions sans filtre et réduire avec le catalogue G Gaia
- Faire des images en bande L (Luminance Visible) ou avec un filtre anti InfraRouge (IR-Block) et réduire en bande Gbp
- Faire des images en I Cousins ou I Bessel et réduire en Grp

Vous avez les filtres RAPAS que faire dans votre roue?

- Remplacer le filtre C sinon le L par RAPAS G (A)
- Remplacer le filtre L sinon le IR Block, sinon le V par RAPAS Gbp (B)
- Remplacer le filtre I sinon le R, par RAPAS Grp (C)

Les autres motivations pour passer aux filtres RAPAS

- Nuit avec de la Lune : filtre RAPAS Grp
- Nuit sans Lune et activité solaire, night glow : filtre RAPAS Gbp
- Réduire la turbulence atmosphérique sur les occultations : Grp
- Améliorer le S/B pour les transits exoplanets Exoclock : Grp
- Magnitude des comètes mesure poussiere en Grb (hors raies)
- Magnitude des cometes activité ionique en Gbp et faire du Gbp-Grp
- Etoiles variables en exploitant les BDD Gaia
- Trichromie sensible RVB avec les filtres Grp, G, Gbp
- …

2026 RAPAS Network

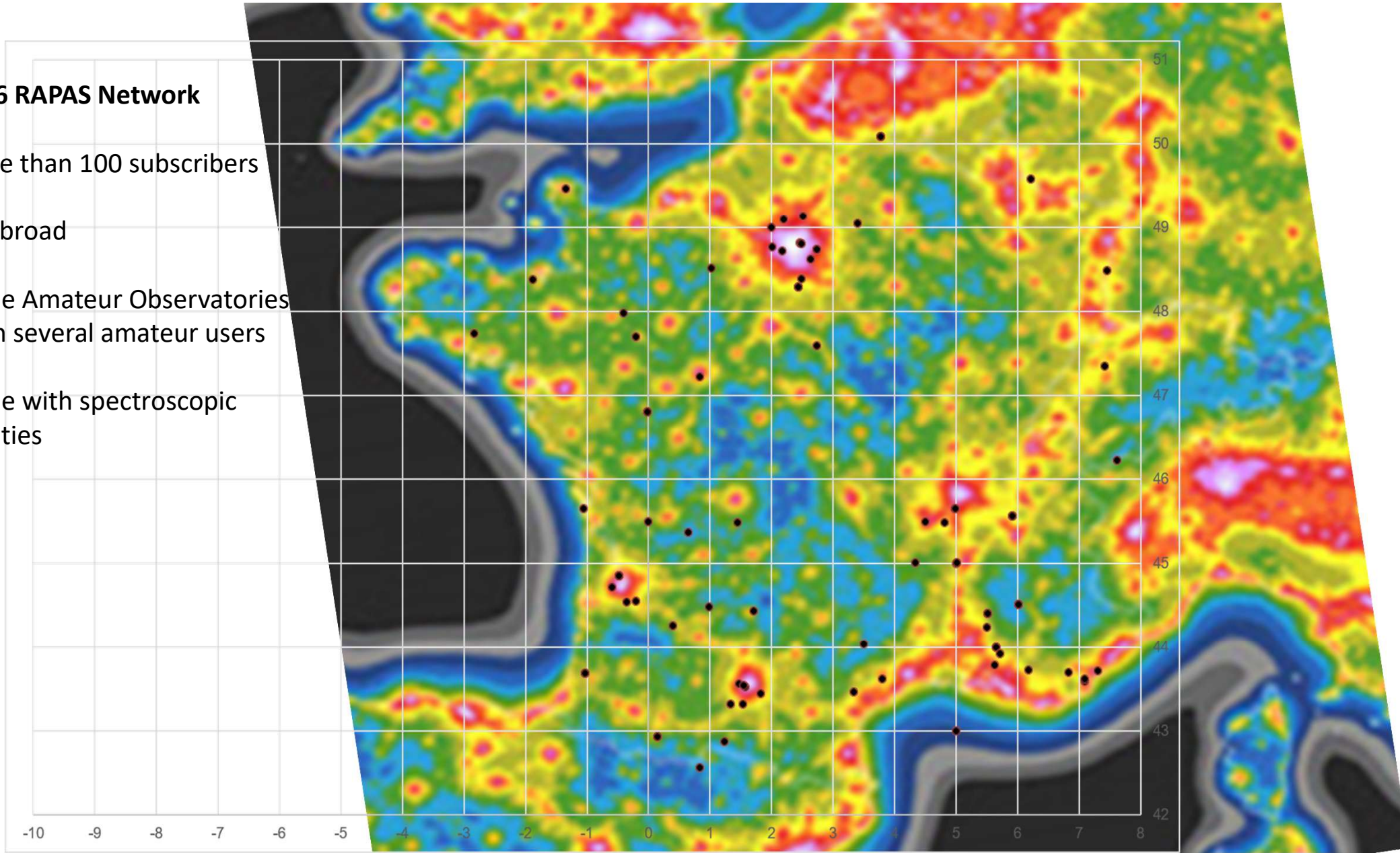
More than 100 subscribers

10 abroad

Some Amateur Observatories
With several amateur users

Some with spectroscopic
Abilities

…



2026 RAPAS registered telescope features

Diameters in mm

Pupil Area in m²

f/D or f number

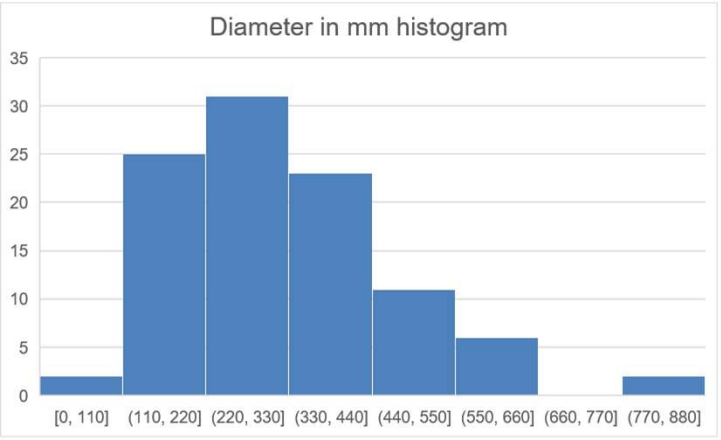
focal length in mm

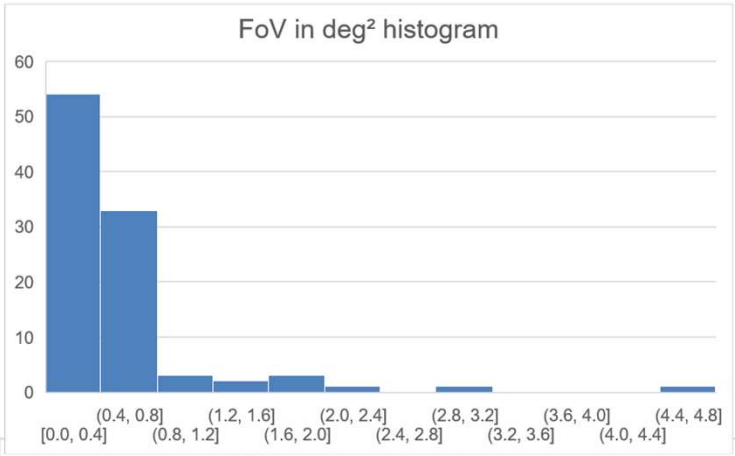
focal plane array areas

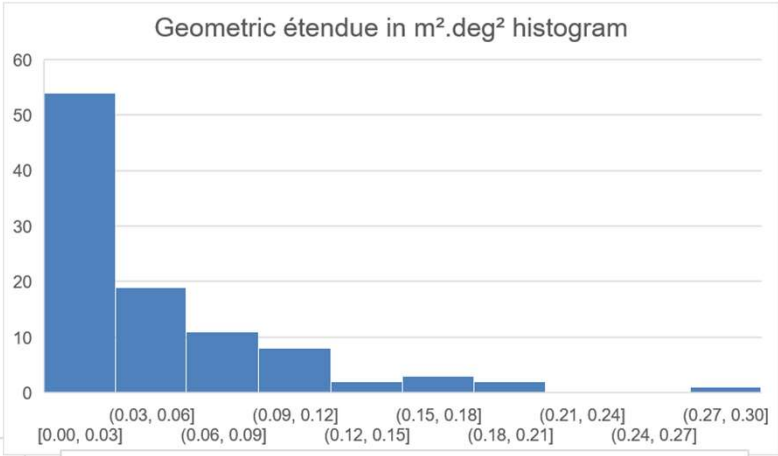
Pixel pitches

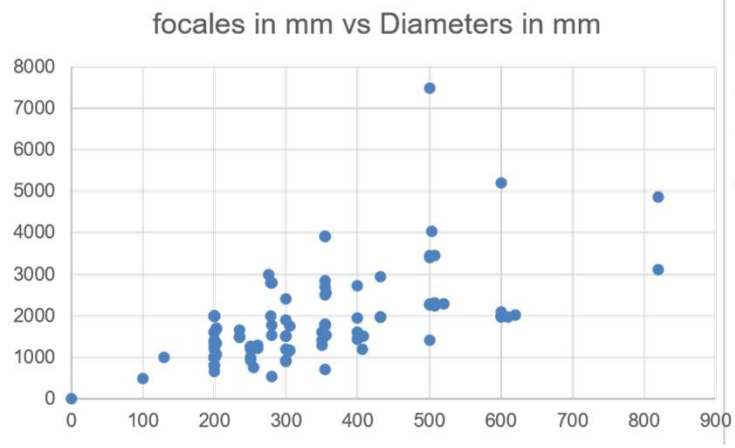
Field of View (FoV) in square degree (°²)

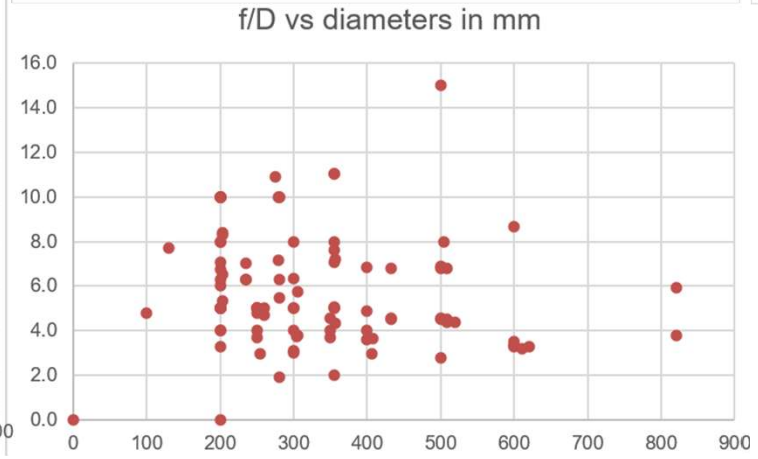
Geometric étendues (Pupil Area x FoV) in m² x °²

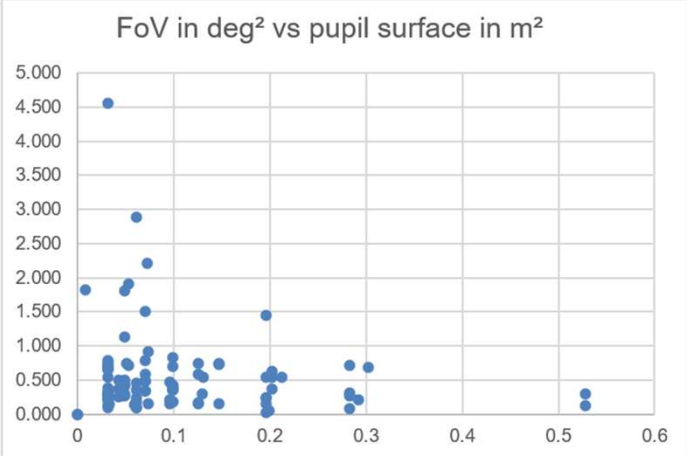




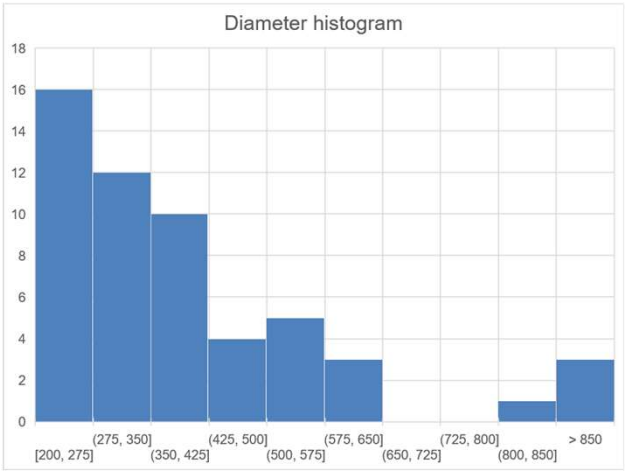






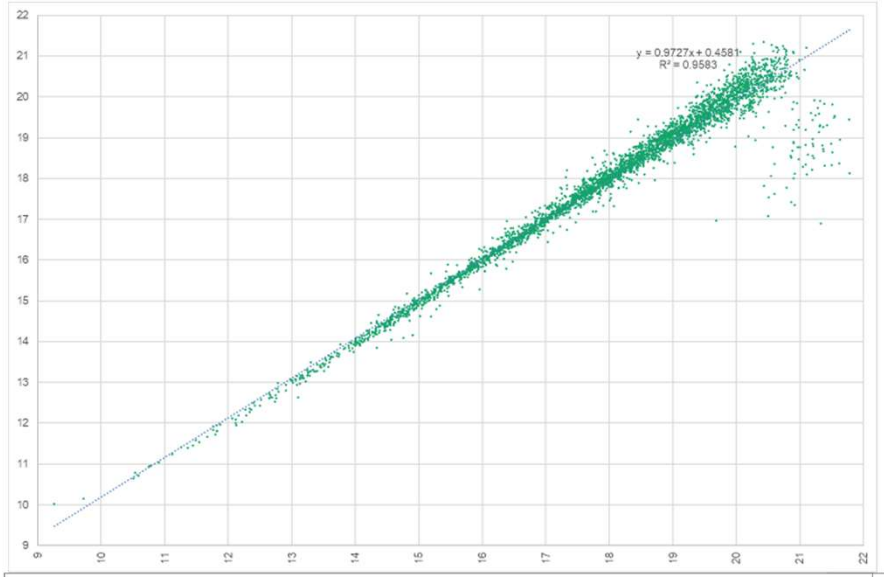


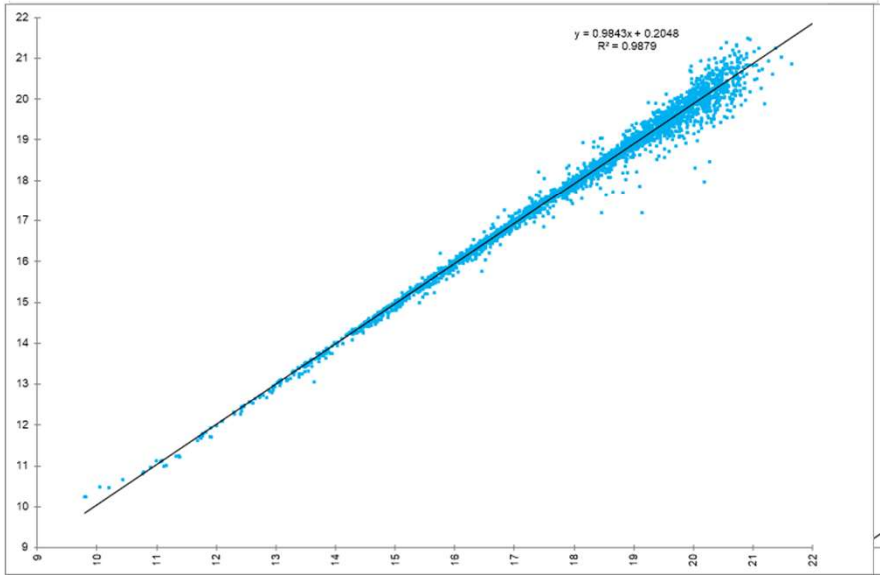
The delivery of the 2 RAPAS filter batches :
First end of 2022, then the second 2025 1st semester

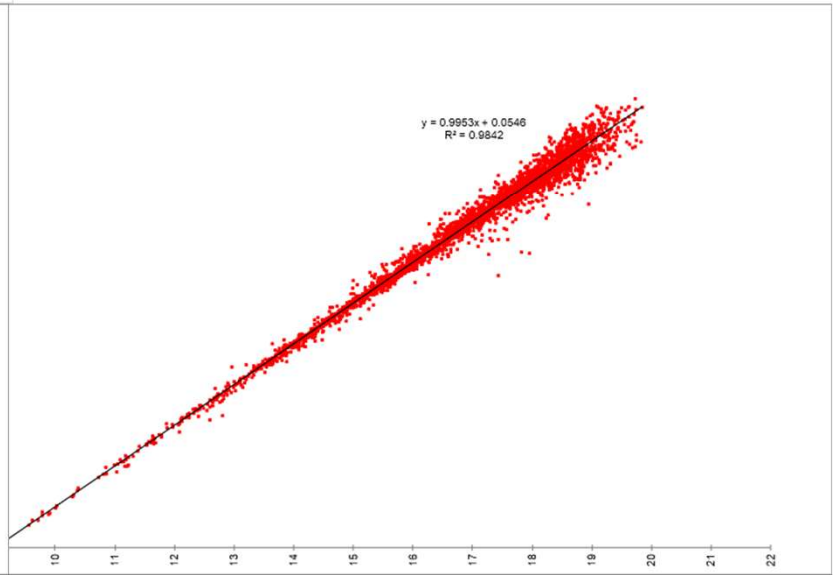


- + Pic-du-Midi (OMP)
- + Calern C2PU
- + T120 Haute-Provence Obs.
- +T100 Lulin Taiwan

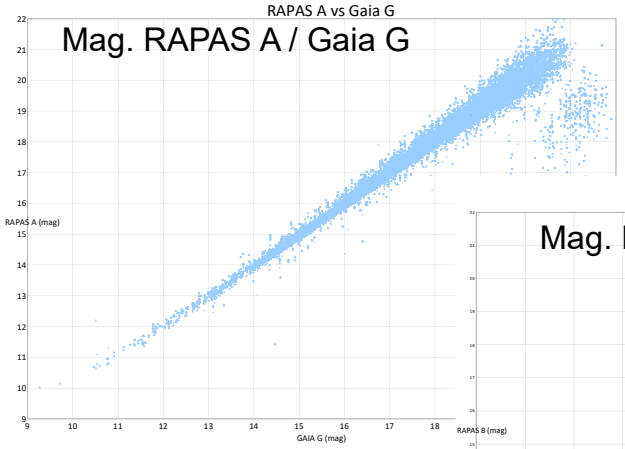
Prénom	Nom	Club, affiliation ou observatoir	Longitud	Latitude	Dis	Dian	Surfa	Foca	f/D	Camera	Capteur	taill	taille	pixel µ	Champ °	F Gui	D filtr	Logiciels	Commenta	N°	Date de liv	exposition
Patrick	Martinez	SAF - ADAGIO - Observatoire d	1.8163	43.4442	A05	820	0.528	3110	3.8	Moravian C	CMOS	24	36	3.76	0.2932454		50			12	11/11/2022	
Yannic	Delisle	CPS TJMS Buthiers	2.4380	48.2918	199	600	0.283	2100	3.5	QHY268MM	IMX571	15.7	23.5	3.76	0.2746424		50	PrismV11		5	09/10/2022	
Michel	Rieutord	Observatoire Midi-Pyrénées	0.1450	42.9369		508	0.203	2299	4.5	ZWO ASI 6	C'est le T50	24	36	3.76	0.5366217		50		2 filtres sloan	19	26/06/2023	
Thierry	Midavaine	Observatoire Salvia, SAF	-0.4075	47.9825	i73	508	0.203	1400	2.8	ASI6200MM	IMX455	24	36	3.76	1.4469995	0	50	PrismV11	vignettage su	1	31/10/2022	600
Jean-Marie	Lopez	SAM- Observatoire des Pises	3.5036	44.0392	122	520	0.212	2288	4.4	ASI6200MM	IMX455	24	36	3.76	0.5417938		50	PrismV11	Tycho Tracke	14	13/11/2022	
Philippe	Dupouy	Observatoire de Dax	-1.0300	43.6933		500	0.196	2250	4.5	ASI1600MM		13.38	17.69	3.8	0.3908247		36			7		aout 2025
Louise	Vaslin	Observatoire Jocelyn Bell de Tou	1.4685	43.5632		508	0.203	3454	6.8	Moravian C4	16000	37	37	9	0.3767001		50	Prism NINA	pas opération	6	12/11/2022	oct-25
Éric	Barbotin	Astroclub charentais	0.0000	45.5000		500	0.196	3400	6.8			24	36		0.2453552		50			16	01/05/2023	
Anaël	Wünsche	Observatoire des Baronnies Pro	5.5000	44.4000	B10	430	0.145	1970	4.6			24	36		0.7308178		50			8	11/11/2022	120
Florent	Losse	St Pardon de Conques (observal	-0.2031	44.5588	I93	408	0.131	1500	3.7	ASI2600MM	IMX	15.7	23.5	3.76	0.5382914		36		Très actif sur	23	13/11/2022	60
Jean-Louis	Dumont	Société Astronomique de Tourai	0.8300	47.2200	R73	400	0.126	1600	4.0	ZWO 183MM		8	13.9		0.1586376			Prism V11		13	13/02/2024	
Marc	Serrau	SAF & Planète-Sciences	5.6475	43.9997	R83	400	0.126	2730	6.8	QHY268M	IMX571	15.7	23.5	3.76	0.1666825		50	Prism V11		18	13/11/2022	3600
Arnaud	Leroy	Uranoscope de l'Ile de France	2.7422	48.7422	A07	355	0.099	710	2.0			11.31	11.31	3.76	0.8329816		50		porte filtes m	11	11/11/2022	
Philippe	Morel	Observatoire Charles Fehrenbac	3.7761	50.0848		355	0.099	3910	11.0			24	36		0.1855244		50.8			2	13/11/2022	Vega
Christian	Pantacchini	Observatoire de Benayes	1.4500	45.4833		304	0.073	1141	3.8	0		24.2	36.3	9	2.2148436		50		Nom obs AA	22	13/11/2022	echange de fil
Patrick	Sogorb	Club Luberon Sud Astro, Bastid	5.6281	43.7908	D11	280	0.062	1530	5.5				16		0.359		31.75			17		retour des filtr
Lisa	Maris		5.9106	45.5614		280	0.062	1764	6.3	ATIK4000	KAI 04022	16.05	16.67	7.4	0.2453453					25		1200
Pierre	Barroy	Université Jules Vernes et TJMS																		4		
Jean-Marie	Vugnon	club eclipse	-0.0177	46.8111		260	0.053	1220	4.7			24	36				50			21	13/11/2022	
Jean-Baptist	Marquette		0.3911	44.2616	D99	250	0.049	923	3.7	ZWOASI183MM	pro	8.81	13.19	2.4	0.4477668		31.75	Siril		24	01/12/2023	
Guy	Copin	GAP 47	0.9833	44.4833		250	0.049	1250	5.0				23.2		1.1307752		50		Très interress	20	Poste	
Arnaud	Leroy	Uranoscope de l'Ile de France	0.8300	47.2200		250	0.049	1250	5.0	PlayerOne	IMX533	11.31	11.31	3.76	0.2687476					11		720
Patrick	Wullaert	SAF, Astro-Club d'Ouzouer sur	2.7401	47.5880		200	0.031	1000	5.0			7	11.25		0.2585172		31.75		Mon club pos	15	11/11/2022	prêt pour des
Jean-Noël	Ferrier	Escalier aux Etoiles	2.4817	48.8072		260	0.053	1300	5.0		IMX571	15.7	23.5	3.76	0.0942127		50.4			9		
Patrick	Baroni																			3		rechanges
																				10		
Lot 2																						
jean-pascal	Vignes	Exoclock collaboration	-70.8500	-30.5200		432	0.147	1959	4.5			24.0	36.00	3.76	0.7390477					26	07/01/2025	
																				27		
Jean-Christo	Dalouzy	Observatoire de Rouen	-1.3480	49.4680		350	0.096	1400	4.0			10.0	12.5		0.2093604					28	07/01/2025	
Cyrille	de Brebisson	CAM, Observatoire Hubert Reev	4.3350	45.0070		600	0.283	5200	8.7			25.0	26		0.0789133					29	07/01/2025	
Yoann	Degot Longh	Observatoire de Haute Provence	5.7122	43.9289		600	0.283	2000	3.3			24.0	36		0.7090585					30	07/01/2025	
Guillaume	Biesse	SAF	4.9833	45.6500		300	0.071	928	3.1	ASI533MM	IMX533	11.3	11.31	3.76	0.4876001					31	07/01/2025	
Cédric	Latgé	Saint-Orens/ADAGIO	1.5452	43.5464		235	0.043	1650	7.0	ASI2600MM		17.5	23.5	3.76	0.4958746					32	07/01/2025	2000
Frédéric	Pertuisot	AAL, K26	6.2201	49.5822		280	0.062	2800	10.0			15.0	15.00		0.0942127					33	01/11/2025	
Bernard	Trégon	Observatoire du Clocher Brantôn	0.6437	45.3712		203.2	0.032		0.0	Atik 460EX		10.0	12.5		0.3511371			TychoTracker		34	07/01/2025	
Sébastien	Cretier	Observatoire de Buthiers	2.4847	48.3866		200	0.031	1000	5.0			12.9	12.9		0.5462767					35	25/01/2025	
Jérôme	Miroux		0.0000	0.0000		250	0.049	1200	4.8			11.3	11.31	3.76	0.2916094					36	16/01/2025	juin-26
Thomas	Salomon	Astronomie Gironde 33	-0.5900	44.7200		355	0.099	2840	8.0			24.0	36		0.3516527				impression 3	37	07/01/2025	
Fred	Denjean	Astronomie Gironde 33 AG33	-0.4845	44.8592		200	0.031	1260	6.3	ASI2600MM	PRO	15.7	23.5	3.76	0.7628752			Siril		38	07/01/2025	360
Pierre-Yves	Lechapelain	Observatoire de Bretagne Sud	5.9106	45.5614		280	0.062	1764	6.3	ASI533MM	IMX533	15.2	15.30	3.76	0.2453453	guidage :	31.8	std pipe		39	16/01/2025	1800
Arnaud	Leroy		46.505833	-15.8339		355	0.099	2510	7.1			15.7	28.3		0.4173126					40	24/01/2025	été 2025
Thomas	Ravinet		1.2294444	42.8753		504	0.2	4032	8.0			13.1	15.97		0.0514878					41		
Olivier	Dechambre	Club Eclipse	2.0144	48.7650		305	0.073	1159	3.8	QHYCCD268M		13.5	23.6	3.76	0.9112253		50.0	NINA		42	25/01/2025	120
Guy	Brabant	AFA	5.0000	45.0000		200	0.031	660	3.3											43		
Cyril	Cavadore	cyril.cavadore@gmail.com	4.5000	45.5000		300	0.071	2400	8.0			24.0	36.00		0.4924076					44		
Stéphane	Charbonnel	https://groups.io/g/RAPAS/mem	-0.2000	47.7000	949	300	0.071	1900	6.3	ATIK11	KAI11000	24.0	36.07	9	0.1855244		50.0			45		
Franck	Spingler	Observatoire de Saint Domineuc	-1.8805	48.3753	Y84	400	0.126	1440	3.6			23.5	15.70		0.5408479					46		
Christian	Sartini	Qfastro/Adagio	1.3400	43.3200		235	0.043	1480.5	6.3	ASI294MM	pro	13.0	19.1	2.3	0.3718745			Nina, Siril, Hops, Muniwin		47	04/07/2025	
Denis	Marchais	Observatoire du Crous des Gats	1.5400	43.3200		406	0.129	1200	3.0			11.3	11.31		0.2916094					48	05/07/2025	
Jean-Luc	Martin	GAPRA Antibes et SACA	6.8333	43.7000	non	250	0.049	1260	5.0	SBIG ST8		12.70	19.05	9	0.500	#REF!	36 et 50		RC250 et ST	49	septembre	decembre 202
Michael	Irzk	SAF, Planete sciences	2.6300	48.6200		355	0.099	2700	7.6											50		

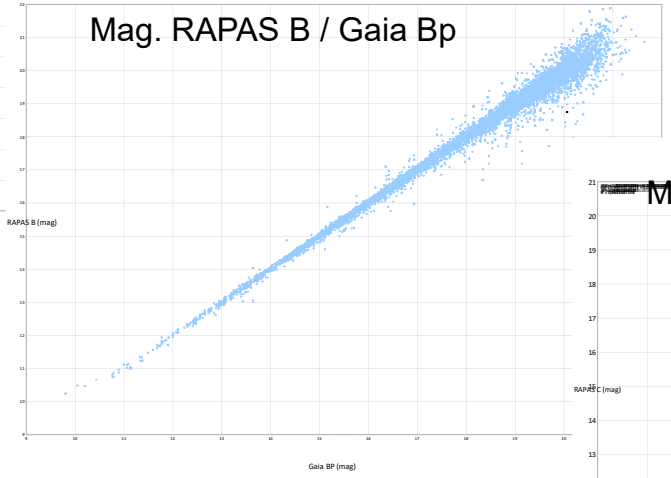

y = 0.9727x + 0.4581
R² = 0.9583

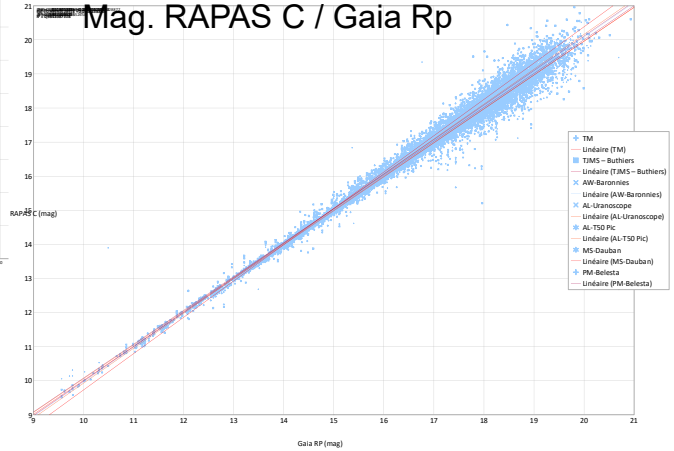

y = 0.9843x + 0.2048
R² = 0.9879

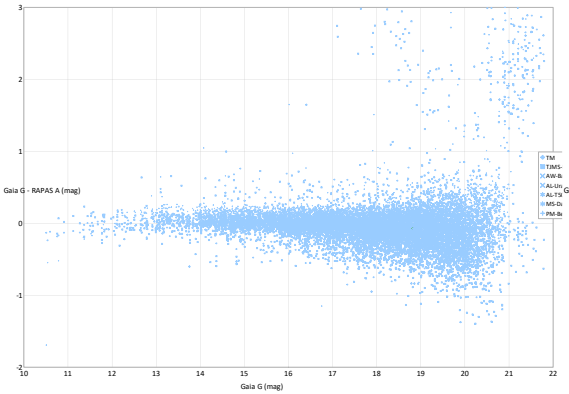

y = 0.9953x + 0.0546
R² = 0.9842

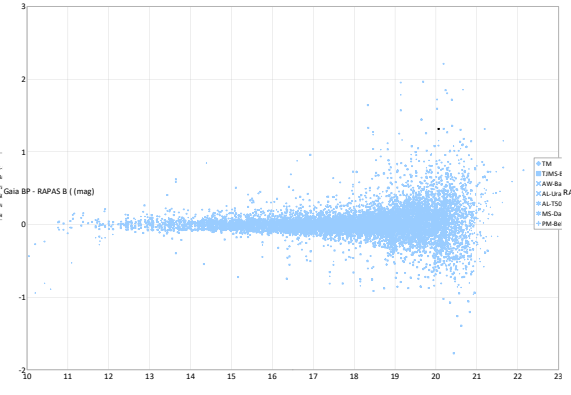
First photometric assessment accuracy from Marc Serrau tool measured magnitude with ABC filters vs Gaia catalog in G Gbp Grp

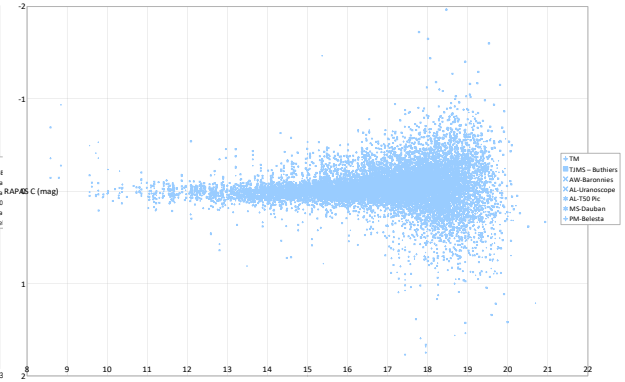




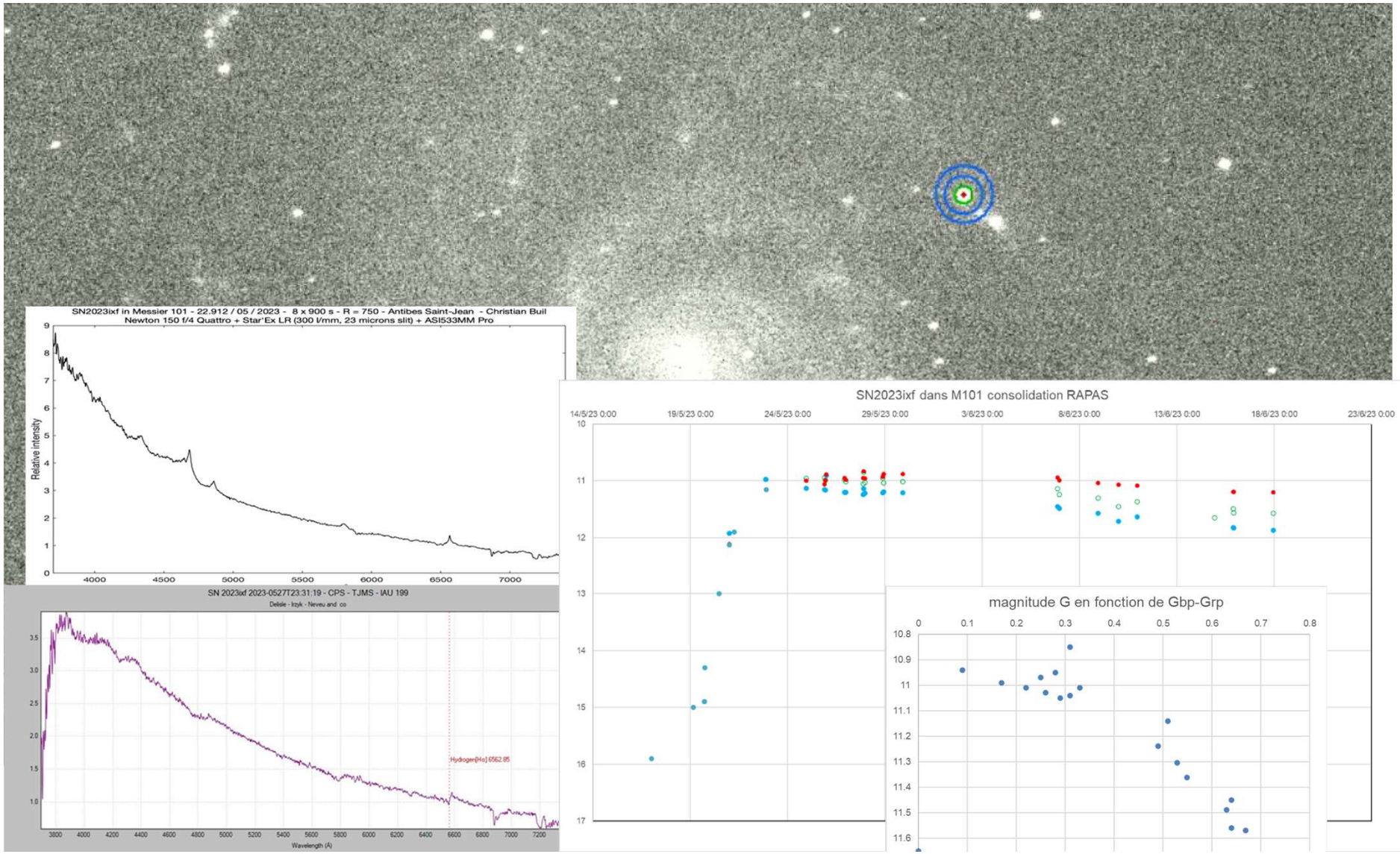


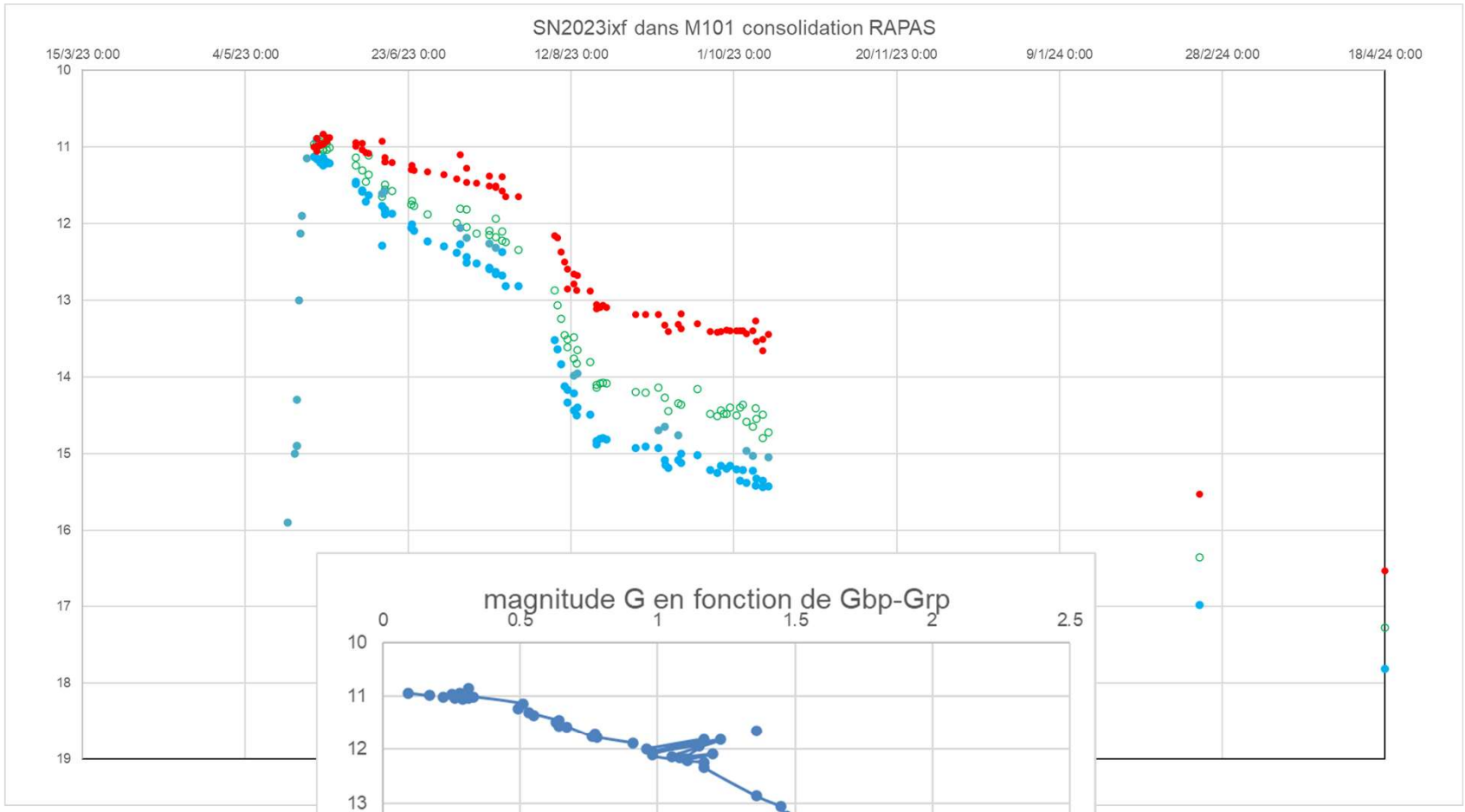






First test on the RAPAS network :
SN2023ixf from M101 discovered on the 19th of may 2023 at m=14,90



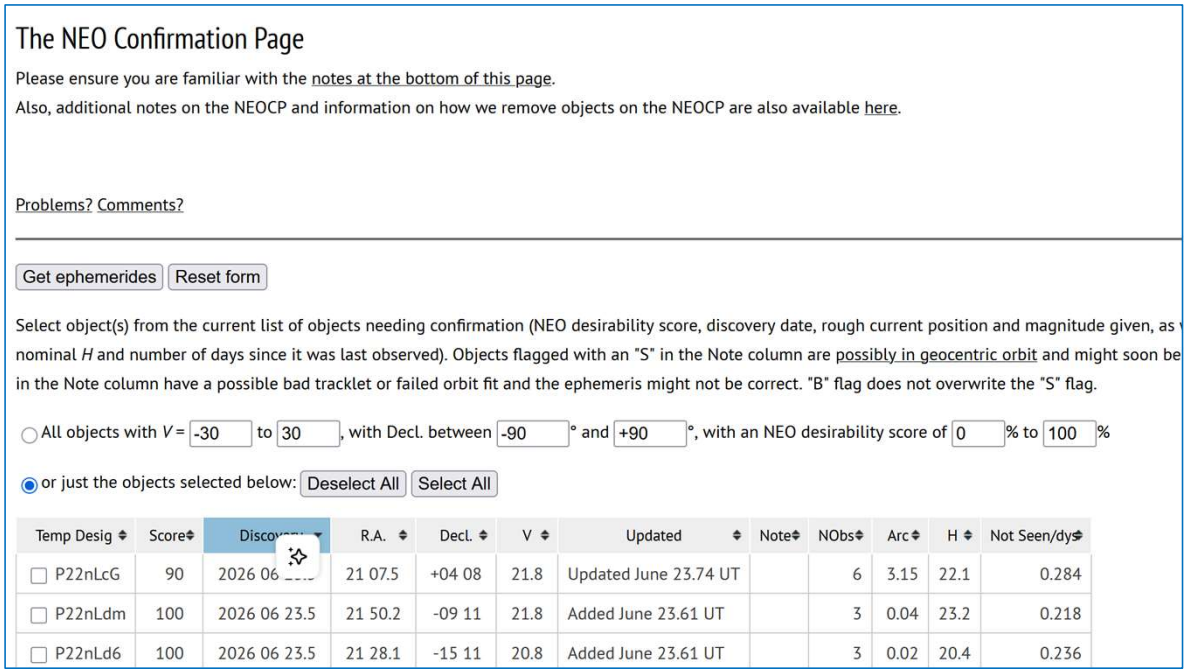

SN2023ixf dans M101 consolidation RAPAS
15/3/23 0:00
4/5/23 0:00
23/6/23 0:00
12/8/23 0:00
1/10/23 0:00
20/11/23 0:00
9/1/24 0:00
28/2/24 0:00
18/4/24 0:00
10
11
12
13
14
15
16
17
18
19
magnitude G en fonction de Gbp-Grp
0
0.5
1
1.5
2
2.5
10
11
12
13
14
15
16
17
18

La traque des NEO

- Depuis le site du MPC :

The **NEO Confirmation Page**

https://www.minorplanetcenter.net/iau/NEO/toconfirm_tabular.html



The NEO Confirmation Page

Please ensure you are familiar with the notes at the bottom of this page.
Also, additional notes on the NEOCP and information on how we remove objects on the NEOCP are also available here.

Problems? Comments?

Get ephemerides | Reset form

Select object(s) from the current list of objects needing confirmation (NEO desirability score, discovery date, rough current position and magnitude given, as
nominal *H* and number of days since it was last observed). Objects flagged with an "S" in the Note column are possibly in geocentric orbit and might soon be
in the Note column have a possible bad tracklet or failed orbit fit and the ephemeris might not be correct. "B" flag does not overwrite the "S" flag.

All objects with *V* = -30 to 30, with Decl. between -90 ° and +90 °, with an NEO desirability score of 0 % to 100 %

or just the objects selected below: Deselect All | Select All

Temp Desig	Score	Discov	R.A.	Decl.	V	Updated	Note	NObs	Arc	H	Not Seen/dys
P22nLcG	90	2026 06	21 07.5	+04 08	21.8	Updated June 23.74 UT		6	3.15	22.1	0.284
P22nLdm	100	2026 06 23.5	21 50.2	-09 11	21.8	Added June 23.61 UT		3	0.04	23.2	0.218
P22nLd6	100	2026 06 23.5	21 28.1	-15 11	20.8	Added June 23.61 UT		3	0.02	20.4	0.236

- Traitement TychoTracker (version fevrier 2025) :

https://www.tycho-tracker.com/

Et astrométrie, avec **Gaia DR3** et photométrie avec filtres RAPAS

- Les acquisitions d'images:

Mode standard en vitesse sidérale si NEO lent, mais si NEO rapide (~> 1arcsec/min), poses courtes et stacking, ou bien télescope en mode suivi de l'astéroïde.

- Livraison ADES des mesures:

Analyse astrométrique puis mise au format et expédition automatique sous Tycho Tracker

Astro-COLIBRI / RAPAS filtering of alerts
Collab. with Fabian SCHÜSSLER et al. (CEA IRFU)

- Deliver selected new alerts (1 a day max, 5 a week max) to RAPAS network, then :
  - Perform the alert monitoring for optical alerts in G Gbp Grp color index
  - Detect optical counterpart from multimessenger alerts
  - Deliver candidates R.A. Dec location, 1as acc with magnitude signature G Gbp Grp or color index
  - Classify each alert as a candidate or false alert
  - Deliver new alerts
- In the future, attach the SED (spectral energy distribution) to each unclassified alert to allow classification or rejection,
- End of each week alert poll for observers during the week or intending to observe next week : either we continue the monitoring or we stop it
- Every Friday issue the list of 10 RAPAS targets to follow on the next week
- At any time a RAPAS member may push an Astro-COLIBRI alert in the RAPAS selected list.
- Identification of RAPAS and BHTOM selected alerts

Sujet : [RAPAS] Astro-COLIBRI / RAPAS observation list (2026-06-19)
Date de renvoi : Fri, 19 Jun 2026 07:00:18 -0700
De (renvoi) : astro.colibri@gmail.com
Date : Fri, 19 Jun 2026 07:00:13 -0700 (PDT)
De : Astro COLIBRI via groups.io <astro.colibri=gmail.com@groups.io>
Répondre à : RAPAS@groups.io
Pour : RAPAS@groups.io, astro.colibri@gmail.com

Chers membres du réseau RAPAS,

Nous sommes ravis d'annoncer une nouvelle liste de cibles astronomiques pour l'observation !

Veuillez visiter le lien suivant pour voir les détails : "RAPAS observation list starting 2026-06-19"

Vous pouvez télécharger les événements proposés "ici"

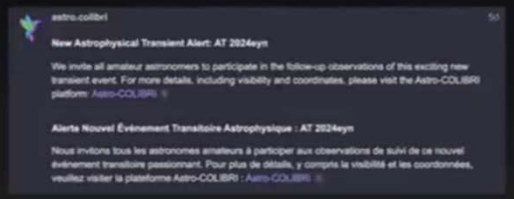
Ciels dégagés,
L'équipe Astro-COLIBRI

Liste d'évènements "phares"

https://forum.astro-colibri.science/c/rapas

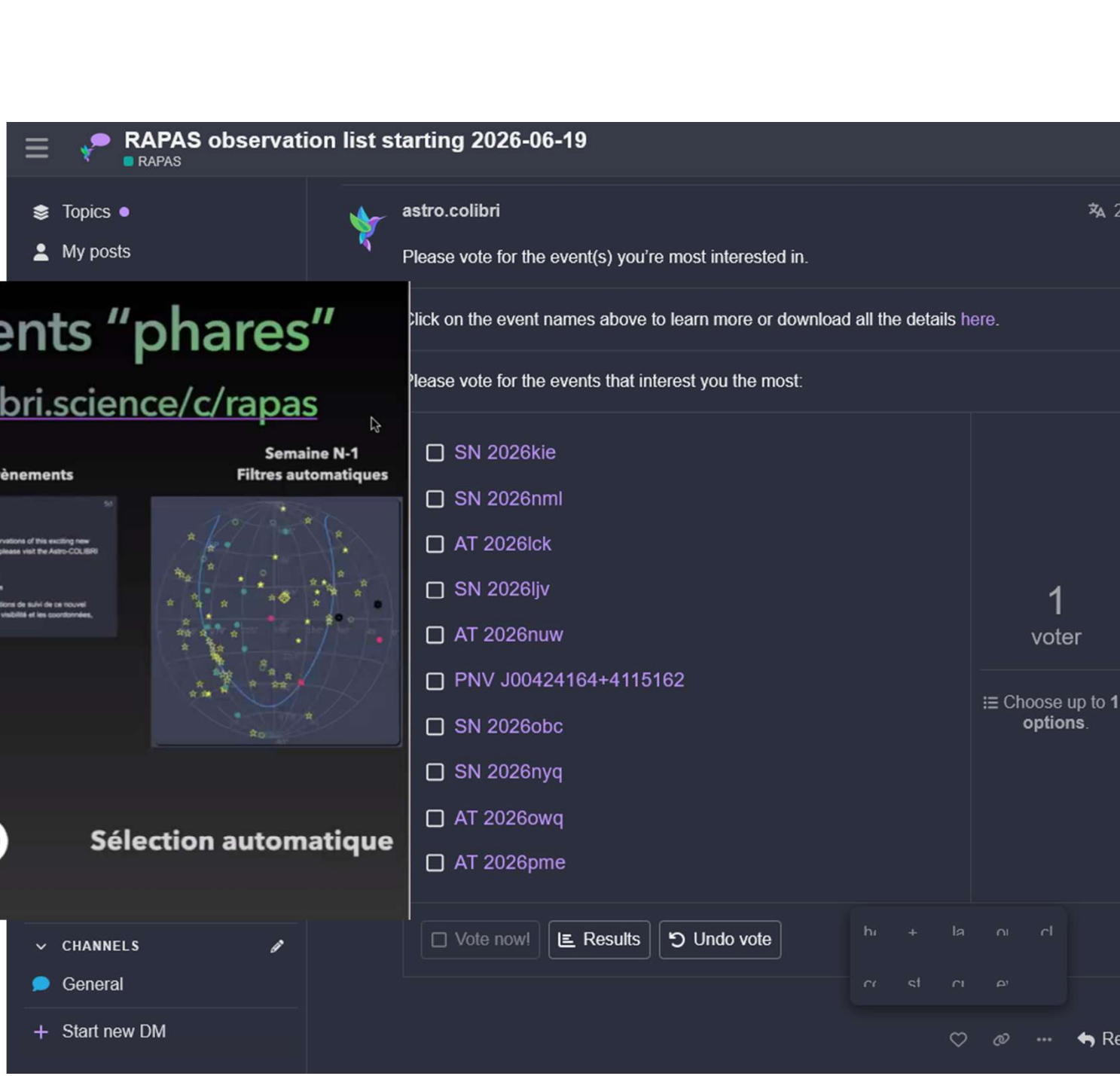
Semaine N-1
Vote des membres de RAPAS

Semaine N-1
Soumissions de nouveaux évènements



Semaine N-1
Filtres automatiques

Sélection manuelle + **Sélection automatique**



Spreadsheets to collect RAPAS observer measurements

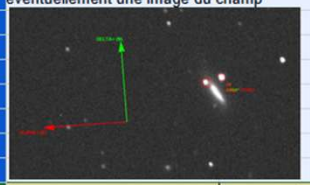
RAPAS 2026

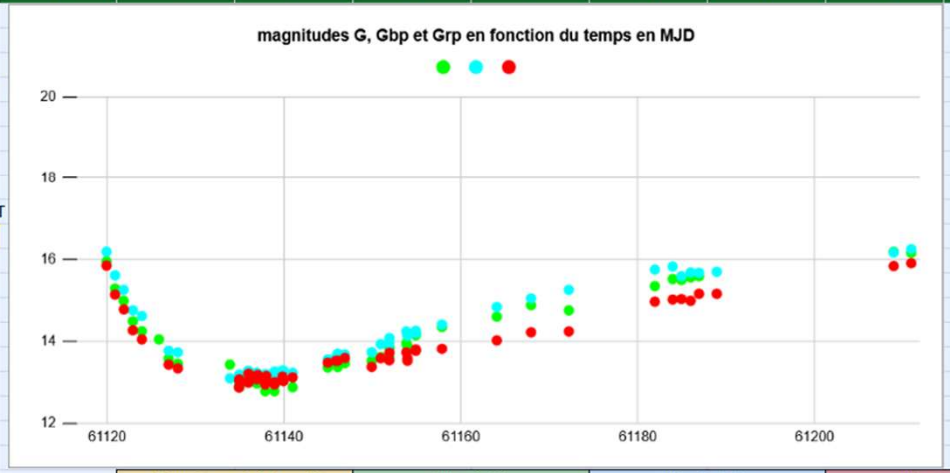
Fichier Édition Affichage Insertion Format Données Outils Extensions Aide

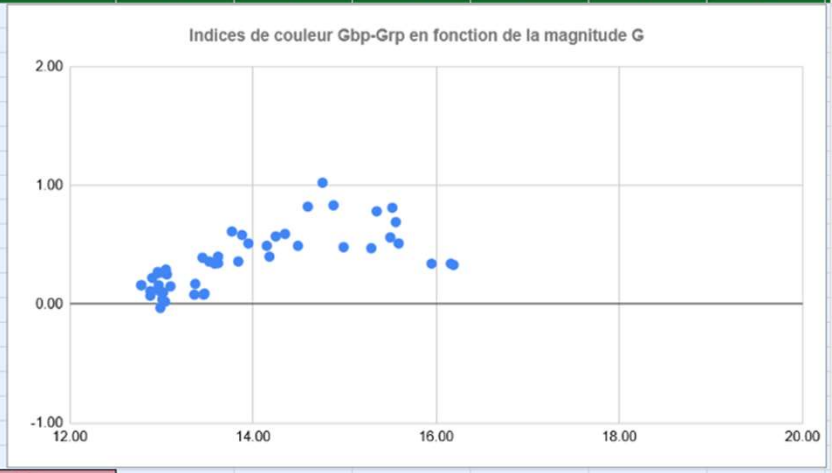
Partager

Nom de l'alerte	SN 2026fvx
Date de l'alerte	17/03/2026
RA (deg dec)	183.7419128
Dec (deg dec)	63.787784
galaxie hôte	NGC4205
Nature	SN Ia
magnitude decouverte	19,46
redshift z	0.004846
Commentaire	decouverte LAST
Statut AstroCOLIBRI/RAPAS	
date de fin de l'alerte	
RAPAS restricted	0

eventuellement une image du champ







			Cf mode emploi si modif		Filtre A / G		Filtre B / Gbp		Filtre C / Grp						
Date(JJ/MM/AAAA)	TC(HH:MM:S	MJD	RA(deg.dec)	Dec(deg.dec	Magnitude	Incertitude	Magnitude	Incertitude	Magnitude	Incertitude	indice B-C	upper limit G	Prénom Non	Commentair	champ couv
17/03/2026	23:40:00	61 116.98611												Découverte par LAST	
20/03/2026	22:00:00	61 119.91667	183.74	63.79	15.95	0.14	16.19	0.07	15.85	0.17	0.34		Jean-Louis Dumont	PrismV11	
21/03/2026	21:30:00	61 120.89583	183.74	63.79	15.29	0.06	15.61	0.05	15.14	0.05	0.47		Jean-Louis Dumont	PrismV11	
22/03/2026	20:22:00	61 121.84861			14.99	0.09					0.48		Christian Pantacchini		
22/03/2026	20:41:00	61 121.86181					15.26	0.08					Christian Pantacchini		
22/03/2026	20:54:00	61 121.87083							14.78	0.08	0.48		Christian Pantacchini		
23/03/2026	21:30:00	61 122.89583			14.49	0.12	14.76	0.13	14.27	0.07	0.49		Jean-Louis Dumont	PrismV11	
24/03/2026	21:43:22	61 123.90512			14.25	0.08	14.62	0.06	14.05	0.06	0.57		Christian Sartini	à Toulouse prismV11 2*fwhm	
26/03/2026	20:29:00	61 125.85351			14.05	0.07							Jean-Luc Martin	CCDCiel	
27/03/2026	22:43:00	61 126.94653			13.58	0.04	13.77	0.02	13.43	0.05	0.34		Patrick Martinez, Christian Sartini, Pierre Mazet		
28/03/2026	23:30:00	61 127.97917			13.45	0.07	13.73	0.14	13.34	0.16	0.39		Jean-Louis Dumont	PrismV11	
03/04/2026	20:35:00	61 133.86115			13.43	0.01	13.10	0.10					Jean-Luc Martin	CCDCiel	

kie | AT 2026hyy | SN 2026ewd | AT 2026hwa | SN 2026gzf | GRB260310A | SN 2026fvx | AT 2026gze | SN 2026dix | AT 2026dbl | AT 2026coj | AT 2026cex

Nombre : 676

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2026-04-20 10:02:25 Type: Announcement-Data Release Bibcode: 2026TNSAN.104....1M

SN 2026fvx : Photometric and SED follow-up of the SN in NGC 4205 with the RAPAS ProAm network

Authors: Thierry Midavaine (I73, Club Eclipse), Christophe Boussin (AT60 OMP), Gilles Bouttard (AT60 OMP), Christian Buil (STAROS), Philippe Cétier (R73, SAT), Thibaut Cours (AT60 OMP), Jean-Louis Dumont (R73, SAT), Cedric Latgé (Saint-Orens/ADAGIO), Pierre-Yves Lechapelain (Observatoire de Bretagne Sud), Arnaud Leroy (A07, Uranoscope), Elisabeth Maris (CEPHEE73), Patrick Martinez (A05, ADAGIO) and AT60-OMP Pierre Mazet (A05, ADAGIO), Pierre-Jean Mercier (R73, SAT), Christian Pantacchini (Observatoire de Benayes), Christian Sartini (Qfastro/ADAGIO), Marc Serrau (R83, Observatoire de Dauban), Fabian Schussler (CEA-Irfu DPhP), Michel Dennefeld (IAP), William Thuillot (LTE Observatoire de Paris)

Source Group: RAPAS

Keywords: Time-domain , Instrumentation , Photometry , Spectroscopy , Transient , Supernova , Optical

Abstract: We report on the optical photometric follow-up of SN 2026fvx with RAPAS, a ProAm network using telescopes equipped with a set of filters RAPAS G, RAPAS Gbp and RAPAS Grp meeting Gaia G, Gbp and Grp photometric bands. In addition some observers (STAROS, SAT and AT60 OMP) got spectra of the event.

Discovered by LAST on 2026-03-17 23:39:59.904 at 19.97 ABMag (TNS N°294890) RAPAS ProAm network monitors the rise of SN 2026fvx from 2026-03-19 up to now and will follow it later on. It is classified as a Ia supernova at z=0.004846 (Konno et al. AstroNote 2026-75). During this period, 11 telescopes located in France, using the set of RAPAS G, Gbp and Grp filters meeting the three Gaia G, Gbp and Grp photometric band specifications, collected more than 50 measurements in 1, 2 or the 3 Gaia bands. The photometric consistency was ensured by reducing each frame with the corresponding Gaia DR3 reference catalog for G, Gbp and Grp bands.

The multi-band light curve shows a peak around 2026-04-04 at 12.8 G magnitude while the Color Index Gbp-Grp decreased from 0.5 to 0 showing the rising temperature. Since then the light curve seems to stabilize up to 2026-04-10, then started to fade.

We measured the following envelope's expansion velocity from the SiII 635.5nm absorption (spectra obtained by Christian Buil), and found a decrease coherent with the initial velocity obtained by Konno et al. of 17000 km/s around March 18th :

2026-03-27.882 -10321km/s

2026-04-05.882 -9621km/s

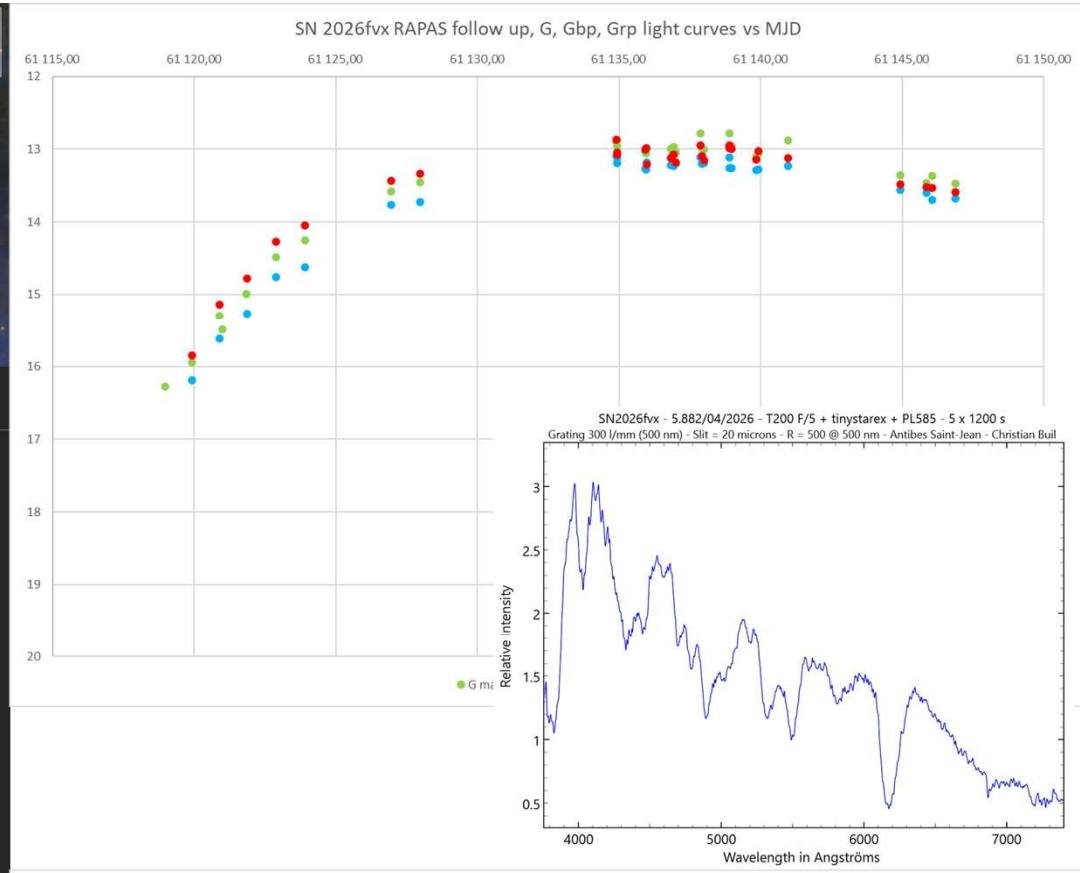
2026-04-15.891 -9300km/s

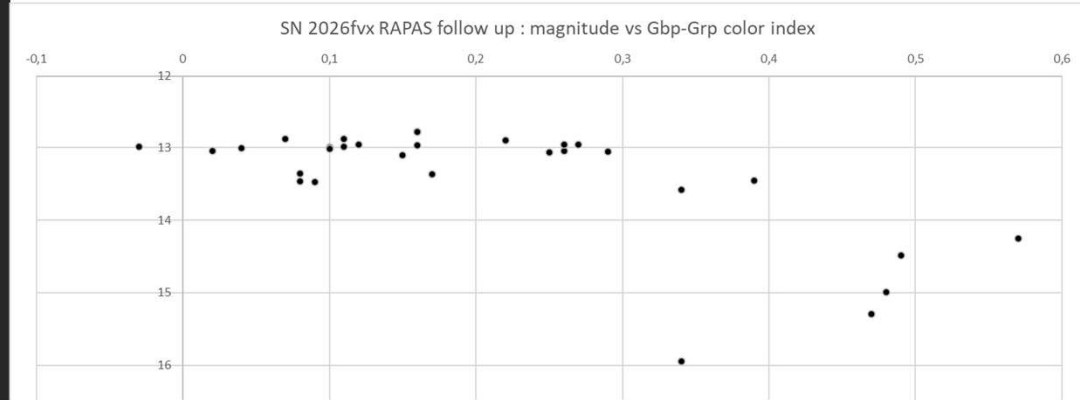
Detailed light curves and data are presented on the RAPAS web page and Astro-COLIBRI web page on the following links :

https://rapas.imcce.fr/SN2026fvx-lightcurve.jpg

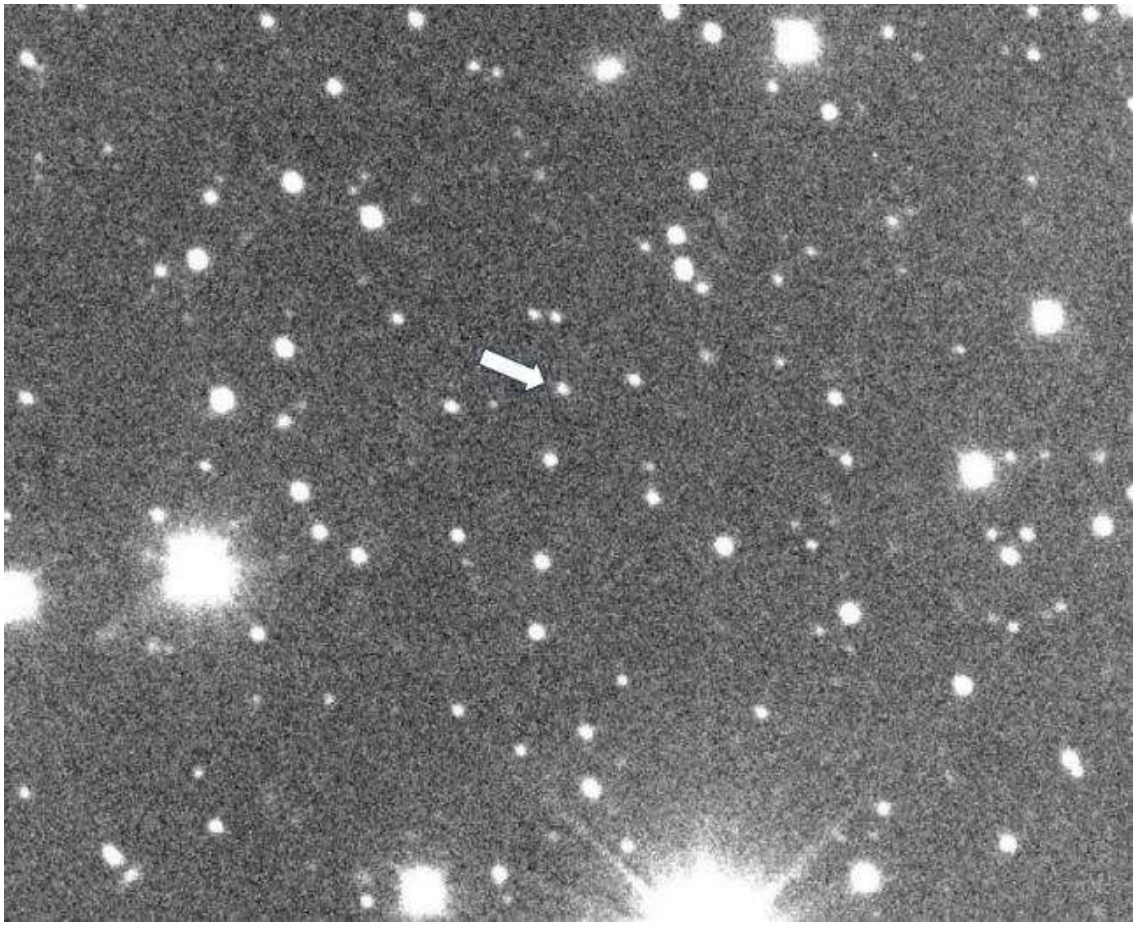
https://rapas.imcce.fr/SN2026fvx-mag-vs-bp-rp-index.jpg

https://rapas.imcce.fr/SN2026fvx_RAPAS.csv



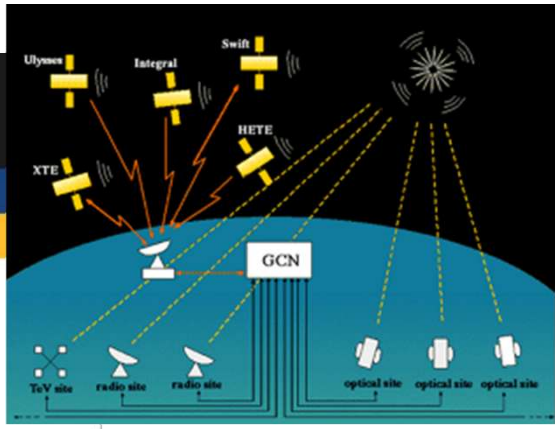


GRB240809A 3 RAPAS observers :
Belesta, M. Serrau, A. Leroy



Each RAPAS observers deliver magnitude measurements on a RAPAS shared google spreadsheets

First RAPAS GCN circular : # 37159



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GCN Circular 37159

Subject GRB 240809A : RAPAS follow-up observations
Event GRB 240809A
Date 2024-08-12T21:51:25Z (a year ago)
Edited On 2024-08-12T22:25:05Z (a year ago)
From Thierry Midavaine at GRANDMA <thierrymidavaine@sfr.fr>
Edited By Leo P. Singer at NASA/GSFC <leo.p.singer@nasa.gov>
Via Web form

Thierry Midavaine on behalf of the RAPAS network reports (#1) :

P. Martinez and C. Latgé [1], M. Serrau [2] and A. Leroy [3] observed the Gamma-Ray Burst GRB240809A (Evans et al. GCN 37110 ; Want et al. GCN 37113) using [1] ADAGIO N 820mm telescope at Belesta Observatory (IAU A05) equiped with a Moravian CMOS camera, [2] SC 300mm telescope at Vidauban [A77] equiped with a QHYCCD CMOS camera and [3] SC 350mm telescope at Madagascar equiped with a ZWO ASI CMOS camera. [1] and [2] are equiped with the set of 3 RAPAS filters meeting the Gaia G, Gbp and Grp photometric bands. The FITS files are reduced with the Gaia photometric catalog in respective spectral bands.

The afterglow is detected RA(J2000) = 5h 50m 10.55s ; Dec(J2000) = -02d 19' 03.3" [1]

MJD (mid)	Gaia filter band	mag.(Gaia)	RAPAS station
60531.66128	G	19.75 ± 0.14	[3]
60531.86667	Grp	20.48 ± 0.60	[1]
60531.86736	G	20.52 ± 0.47	[2]
60531.87778	Gbp	20.10 ± 0.32	[1]
60531.89444	G	20.58 ± 0.19	[1]

RAPAS (https://proam-gemini.fr/rapas/) is a new ProAm collaboration funded by Paris Observatory, delivering to a network of french amateur observatories a set of 3 filters meeting the Gaia spectral bands. This network is dedicated to deliver data in the Gaia photometric system on selected astrophysical alerts by Astro-COLIBRI (https://astro-colibri.com/) or from Gaia alerts.

‹ Previous Circular | Next Circular ›

The RAPAS results

31 alerts issued in 2024 , 73 alerts in 2025 :
for each observation, the measurements are collected in a spreadsheet

LASTJO148554
LAST J034622
TCPJ194330
SN2025ahep
SN2025ahxd
AT2025acft
SN2025advo
TCPJ22410342
AT2025zrj
SN2025yth
AT2025abxe
AT2025aapj
SN2025zto
SN2025abni
AT2025abvg
TCPJ213141
TDE2025aarm
TCPJ19522056
AT2025xto

SN2025zox
SN2025aami
SN2025uaq
AT2025zsx
SN2025vaw
AT2025wbs
V1413aql
AT2025usz
V339Delp
4FGL
J023.5+2046
SN2025tzp
S2025sii
SN2025sei
SN2025rbs
GRB250610B
Sb25061207
RXJ1553.0+4457

SN2025mvn
SN2025lyf
SN2025mbz
SN2025mbd
4FGLJ1311.0+3233
4FGLJ1310.5+3221
ZTF25aarnzfi
ZTF18acsugtc
AT2025kyz
AT2025kwd
GRB250521D
GRB250521B
EP250511a
GRB250510A
GRB250512B
GRB250506A
GRB25051A
SN2025ima

GRB250419A
NuEm250417A
Sb25042207
GRB250416C
SN2024afyu
StKM2-809
SN2025geg
GRB250327B
Sb25032302
GRB250322A
TCPJ05574222+3500099
SN2025erh
AT2025ere
GRB250311B
SN2025coe
SN2025ccu
AT2025axj
SN2025qe

AT2024afyi
AT2024afyx
SN2024aegm
AT2024aezd
AT2024aehf
AT2024abol
AT2024aasb
SN2024abfo
GRB241128A
AT2024abqt
SN2024aalt
GRB241113B
SN2024ppd

SN2024yyu
GRB240809A
EP-WXTtrigger0170
AT2024qui
SN2024pxl
SN2024pvw
PNVJ19430751+2100204
TCPJ174-232
AT2024pns
AT2024pnr
SN2024pmm
SN2024pie
SN2024kxi
SN2024kxi
SN2024iss
SN2024inv
SN2024igg
SN2024bch

Spreadsheets: public access at https://rapas.imcce.fr

RAPAS step 2 : Spectrograph network

Following the candidate detection, localisation and G, Gbp and Grp magnitudes, characterise the alarm with its spectral energy distribution (SED) :

- Reject false alarm
- Classify alert
- Release the SED :

  - Detect continuum blackbody like distribution and equivalent Temperature
  - Detect continuum not fitted to one blackbody
  - Detect temperature variation
  - Detect emission lines : H, Si,…
  - Detect broad absortion bands
  - Detect Balmer or Lyman spectral break and measure z shift.
  - Detect SED variations or changing temperature…

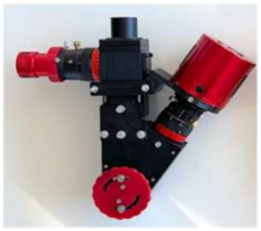
Design high luminosity very low dispersion spectrograph able to meet high upper limit magnitude (20 targeted) and a Resolution > 100 with >400mm diameter telescopes with 1 hour exposure.

The RAPAS spectrographs

Production of 2 spectrograph prototypes relying on existing spectrographs

Goals:

- to allow high sensitivity for amateur telescopes
- to be able to provide a first characterization of the signature in getting the spectral energy distribution (SED).



R=100 1h exp.
30cm diam.: mag 18
60cm diam.: mag 20

still on test

Ch. Buil (2023)

- **Alpy 200**

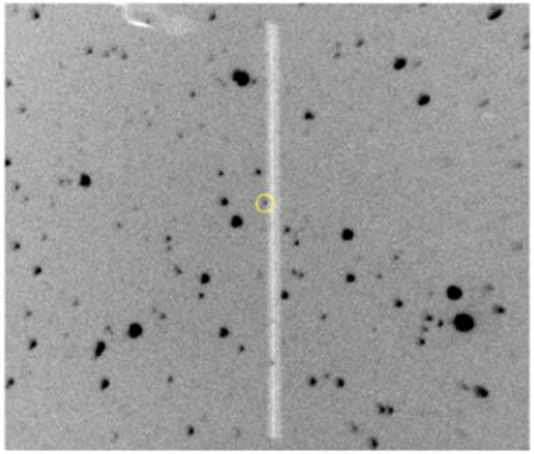
Fitted with a 200g/mm high efficiency transmittive grating instead of grism de 600g/mm with a two slit width (200µm 23µm)

- **Star'Ex VLR** (Very Low Resolution)

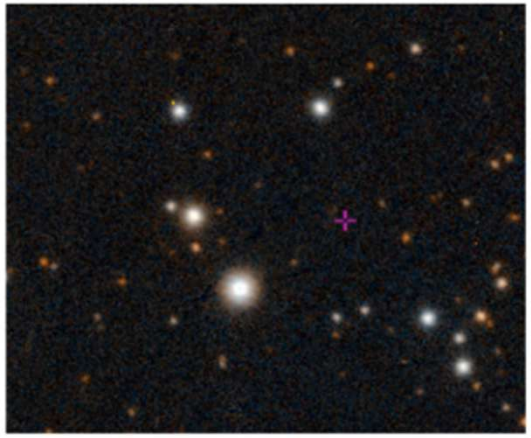
Equiped with a reflective 150 g/mm grating and optional objective focal length reduction from 80mm to 40mm

Robin Leadbeater tests with Alpy 200

SN2023vxt 18.6 r mag 10x600sec C11 f/5



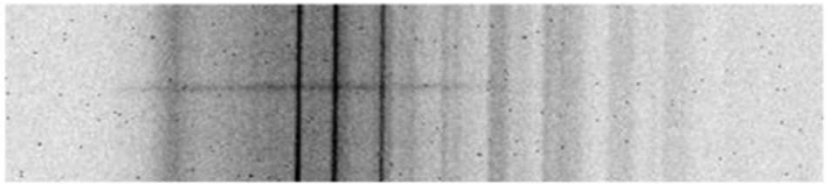
guider image (11x20sec)



Digitised Sky Survey image

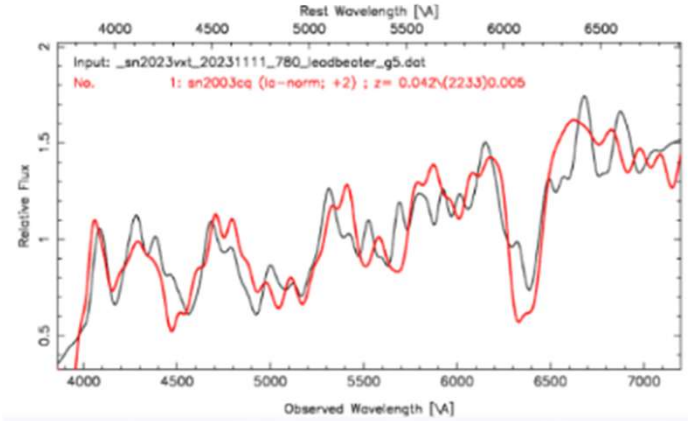
https://archive.stsci.edu/cgi-bin/dss_form

SN 2023vxt 11-11-2023



Raw spectrum image including sky background

(Light pollution (LED, NaD) Air glow (Oxygen, NaD lines ,OH molecular emission bands)

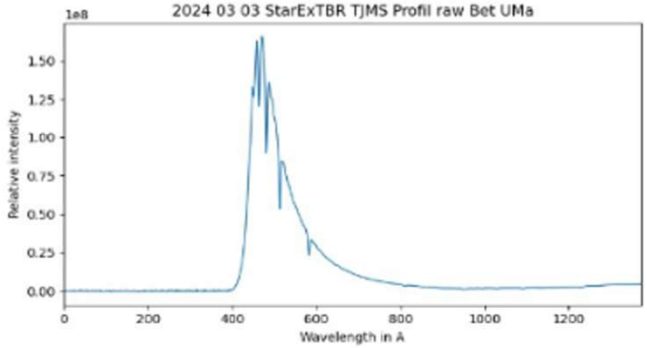


Measured spectrum (black) compared with best match from SNID (red)

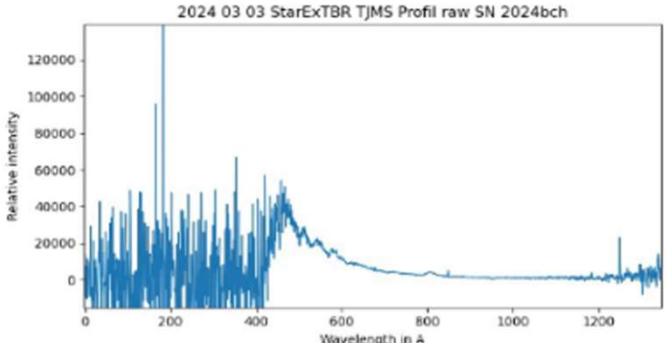
R Leadbeater Three Hills Observatory 20231119

Star'Ex VLR tests at TJMS

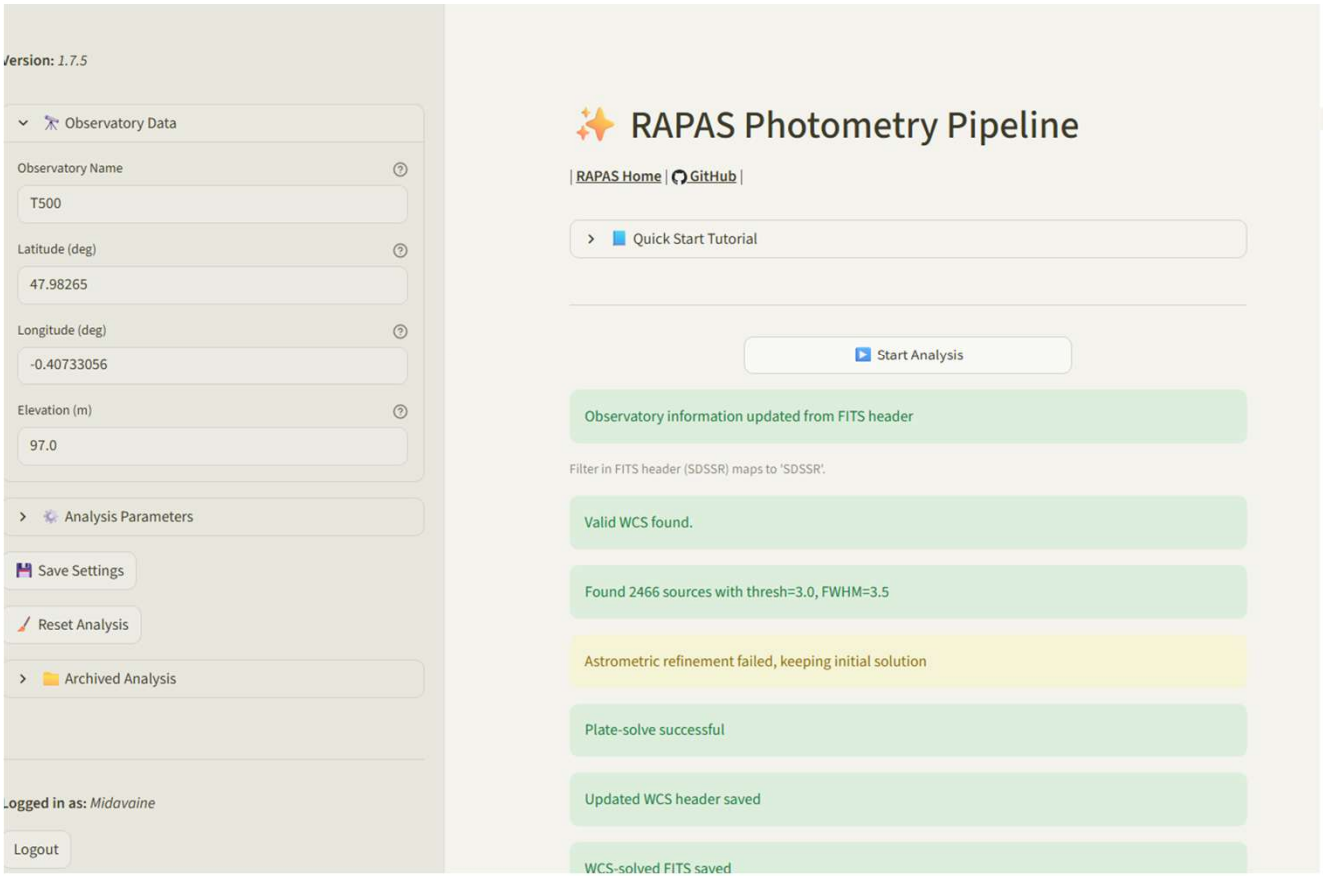
Bet UMa : _betuma_raw.fits

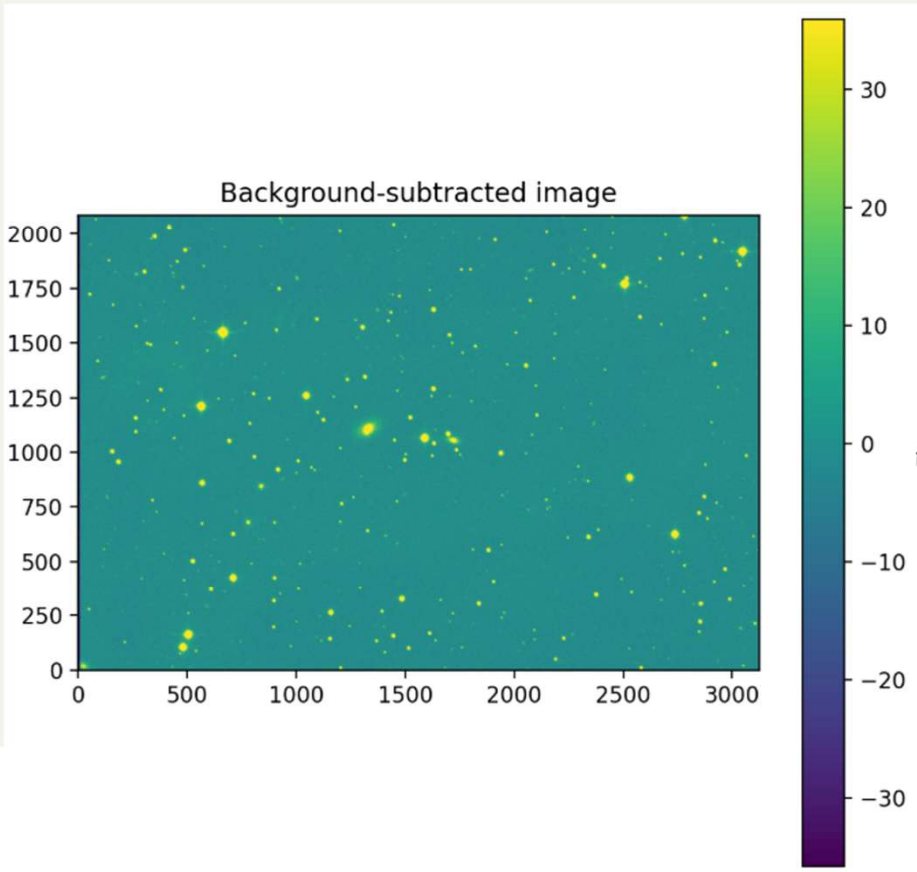


SN 2024bch : __sn2024bch_raw.fits



Le Système de Traitement et d'Archivage des Données RAPAS
RPP PF Rocci





stimating FWHM ...

STDWeb PY Lechapelain

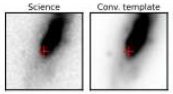
SN 2026kie — Template Subtraction Photometry Report

2 May 2026

OBS Bretagne Sud · SVBONY SV605MC · 250 mm f/3 · Gaia G / BP / RP filters

The RAPAS group (Réseau Amateur-Professionnel pour l'Astronomie des Supernovae, Observatoire de Paris / IMCCE) monitors supernovae and transients through coordinated multi-band photometric follow-up between amateur and professional observatories.

Photometric calibration and template subtraction are performed using STDWeb, a web service built on STDPipe (Karpov, S., 2021, https://github.com/karpov-sv/stdpipe), which provides automated astrometry, photometric calibration against Gaia eDR3, and image subtraction using HOTPANTS with ZTF DR7 HiPS templates. For SN 2026kie, template subtraction is essential: the supernova lies on the host galaxy disk, making direct aperture photometry unreliable due to galaxy background contamination.



Task 3751
G-band, Apr 27
S/N = 11.0

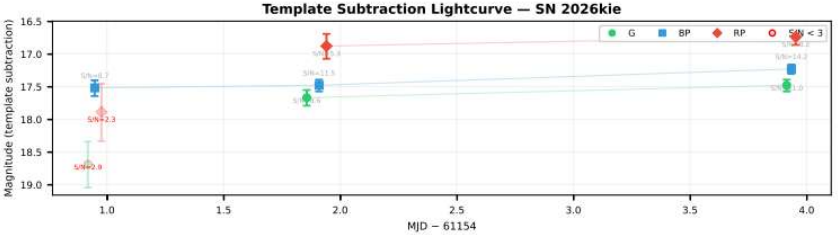
science − conv.
template = residual

Template:
ZTF DR7 r-band
(HiPS cutout)

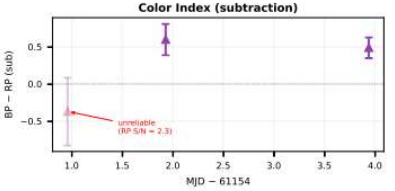
Template Subtraction Configuration

Filter	Calib. mag	Template source	Catalogue	Color term
G	Gaia Gmag	ZTF DR7 r (HiPS)	Gaia eDR3	−0.25
BP	Gaia BPmag	ZTF DR7 g (HiPS)	Gaia eDR3	+0.03
RP	Gaia RPmag	ZTF DR7 i (HiPS)	Gaia eDR3	−0.18

Template Subtraction Lightcurve — SN 2026kie



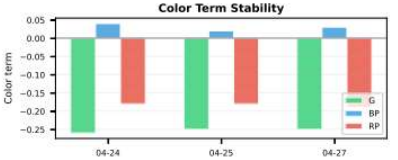
Color Index (subtraction)



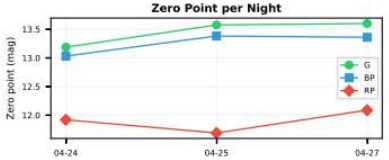
Observation Conditions

Night	Filt	N×30s	FWHM (px)	ZP (mag)	Sub S/N
04-24	G	40	4.68	13.182	2.9
04-24	BP	37	4.88	13.028	8.7
04-24	RP	37	5.17	11.915	2.3
04-25	G	67	5.15	13.571	8.6
04-25	BP	60	4.51	13.378	11.5
04-25	RP	60	4.77	11.684	5.3
04-27	G	40	4.44	13.596	11.0
04-27	BP	40	4.19	13.355	14.2
04-27	RP	40	4.13	12.082	8.2

Color Term Stability



Zero Point per Night



Findings

1. Unreliable first epoch — On April 24, the template subtraction yields S/N = 2.88 (G) and 2.28 (RP), below the S/N = 3 detection threshold. The color index CI(BP − RP) = −0.37 is unphysical and entirely driven by noise in the RP measurement (err = 0.44 mag). The subsequent nights give CI = +0.60 ± 0.21 and +0.49 ± 0.14, consistent within uncertainties.

2. Observation conditions — April 24 had the poorest atmospheric transparency (lowest zero points in all bands, ~0.4 mag below the other nights), worse seeing (FWHM 4.7–5.2 px vs 4.1–4.4 on Apr 27), and fewer stacked frames (37 vs 60 for BP/RP), all degrading the subtraction S/N.

3. No filter swap — Photometric color terms are remarkably stable across all 3 nights: G ≈ −0.25, BP ≈ +0.03, RP ≈ −0.18 (spread < 0.02). A filter swap would manifest as a sudden jump in color term. Intrinsic calibration scatter ≈ 0.01 mag on all 9 tasks.

You are welcome to join the RAPAS network… What's next ?

- https://gemini.obspm.fr/20220101-rapas/
- Get access to tutorials and data : https://rapas.imcce.fr/

You get in the loop of the alerts to deliver data :

- The registration to the RAPAS network allows you to receive messages from the mailing list : RAPAS@groups.io
- You could be then be electable to receive a set of RAPAS filters
- If you have a spectrograph experience you could join the SED RAPAS network we intend to build. You may have a spectrograph loan to perform the tests of Alpy200 and StarEx'VLR
- You could join the Astro-COLIBRI community and tick the RAPAS functionalities :
  - You download the Astro-COLIBRI app on your smartphone
  - You register to AstroCOLIBRI and create a login with in addition the membership to RAPAS
  - https://astro-colibri.science/
- Every month RAPAS Zoom meeting (near the Full Moon either on Saturday or in the evening middle of the week)
- In addition you are invited to register to the following programs :
- BH-TOM2 (Black Hole Target Observation Manager) : https://bh-tom2.astrolabs.pl/
- KNC (KiloNova Catcher) : http://kilonovacatcher.in2p3.fr/

RAPAS 2026 – 2027

RAPAS Frame work :

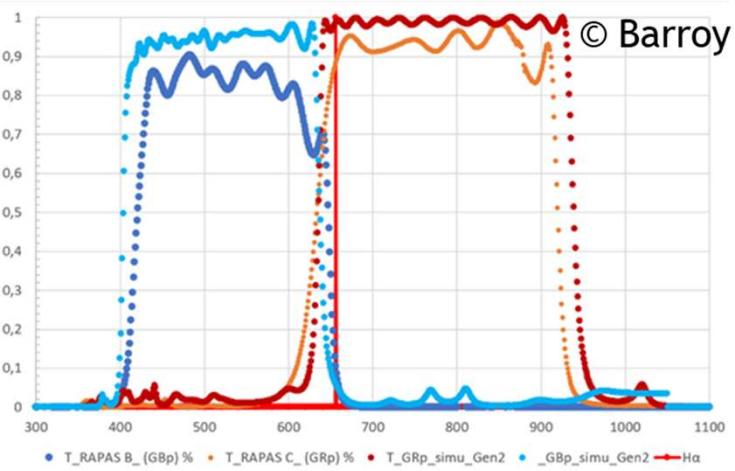
Photometric process, Data Release and Data archiving @obspm (the Paris Observatory – PADC)

Dec 2026 Get ready to use Gaia DR4

Expand the Network

- Enlarge on an international scale the RAPAS network ? Enlarge the longitude and latitude ranges.
  - 10 preregistered foreign observers to RAPAS today
  - RAPAS South Hemisphere ?
- Expand to more European countries with similar organisations in Spain, Italy, Germany…
- Via IAU PARC WG ?
- Strengthen collaboration with Professionnals (BHTOM, ACME, …)
- Access to PESSTO (Public ESO Spectroscopic Survey of Transient Objects) www.pessto.org/marshall/
- Astro-COLIBRI plug in the Vera Rubin Alerts with a RAPAS alert filtering and selection process with Julien Peloton (Fink broker) : for the monitoring of alerts rising under mag 17 where Vera Rubin is becoming saturated.

Develop the Spectro RAPAS Network



- With operational Observers equiped with various Spertographs (Alpy, Star'Ex, …)
- Launch the manufacturing of small batch of optimized Alpy200 and Star'Ex VLR for SED high magnitude able spectrographs to equip the RAPAS Spectro network with 5 telescopes to start (with 400 mm and above diameters) above mag 18 and above 100 resolution abilites.

Funding of Filter design V2 and manufacturing of batch 3 : 100 units x3 filters

- Funding for Phd student / Postdoc
- Find fundings for the manufacturing of a third filter batch using the new optimized coating design improving the filter efficiency.
- Option 2 : manufacturing process meeting professional requirements or even space one's.

Circulaires RAPAS publiées

- Midavaine, Th., Martinez, P., Latgé, C. and 2 more: 2024, GRB 240809A: RAPAS follow-up observations, GRB Coord. Net., Circular Service, No. 37159 2024GCN.37159....1M
- Midavaine, T. & Rapas, Net.: 2024a, GRB 241113B : RAPAS follow-up observation, GRB Coord. Net., Circular Service, 38431 2024GCN.38431....1M
- Midavaine, T. & Rapas, Net. : 2024b, GRB 241128A: RAPAS follow-up observation, GRB Coord. Net., Circular Service, 38438 2024GCN.38438....1M
- Dennefeld M., Schneider B., Adami Ch. et al. : 2025, GRB20250327b, GCN39905 March 2025
- M. Dennefeld (IAP & Sorbonne U.), W. Thuillot (Paris Observatory), Th. Midavaine (SAF) and the RAPAS amateur astronomers group AT2025usz is a dwarf nova in its early phase Telegramme ATel 17355 août 2025 ATel #17355
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