Observatoire Roque de los Muchachos, La Palma

Jean-Francois Le Borgne

Observatoire Roque de los Muchachos

Coordonnées géographique

Latitude 28°45'22" N

Longitude 17°53'30" W

Altitude 2396.00 m.

Administré par l'IAC

Instituto de Astrofísica de Canarias • IAC

https://www.iac.es/en/observatorios-de-canarias/roque-de-los-muchachos-observatory

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Coordonnées géographique

Latitude 28°45'22" N

Longitude 17°53'30" W

Altitude 2396.00 m.

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Principaux télescopes

Une vingtaine de télescopes.

Isaac Newton Telescope (INT)
Ø 2.5m

William Herschel Telescope (WHT)
Ø 4.2m

Gran Telescopio Canarias (GTC)
Ø 10m

Telescopio Nazionale Galileo (TNG)
(Italie) Ø 3.5m

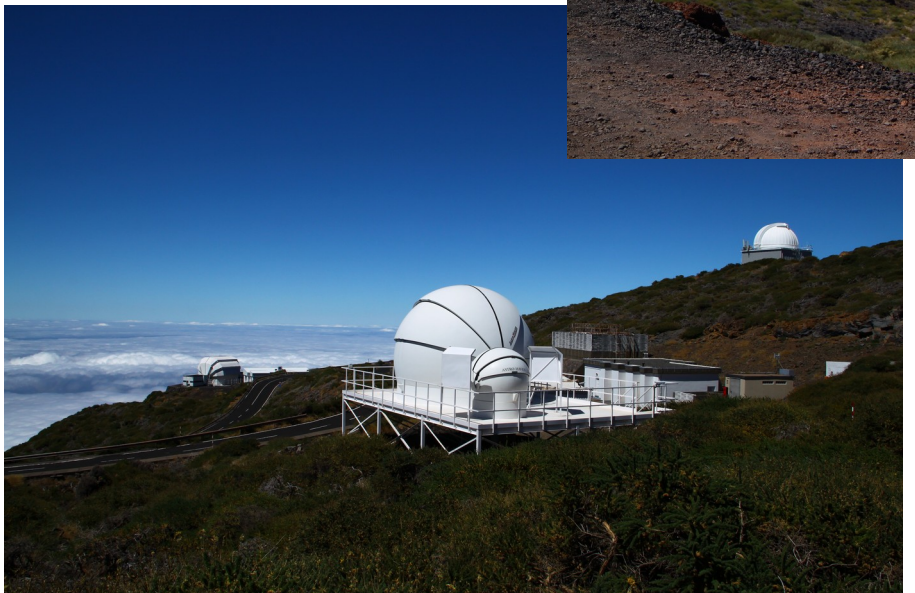
Nordic Optical Telescope (NOT)
(Danemark, Finlande, Norvège, Suède, Université d'Islande) Ø 2.56m

Jacobus Kapteyn Telescope (JKT)
Ø 1.0m

Principaux télescopes

Télescopes Cherenkov :
- MAGIC
- LST (Large Size Telescopes)
- First G-APD Cherenkov Telescope (FACT)

Livepool Telescope (Ø 2.5m)
Mercator Telescope (Ø 1.2m)
Télescopes solaires
…..



Principaux télescopes

Projet : Thirty Meter Telescope (TMT)

Initialement prévu à Hawaii.
Possible installation à La Palma.
400M€ promis par le gouvernement espagnol (août 2025).
Et le reste ?

https://www.iac.es/en/observatorios-de-canarias/roque-de-los-muchachos-observatory

Des opposants bloquent l'accès au site du futur TMT. © Hawaii News Now
https://www.cieletespace.fr/actualites/

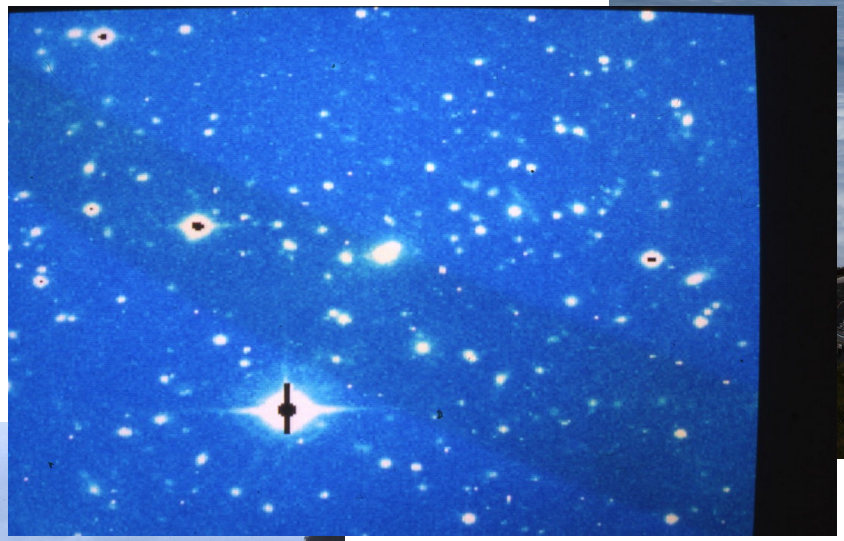
Le site web du TMT continue à situer le télescope à Hawaii

https://www.tmt.org/

Télescope Isaac Newton (INT)

Imagerie d'amas de galaxies et
de lentilles gravitationnelles

A2390 (1988)
z=0.231

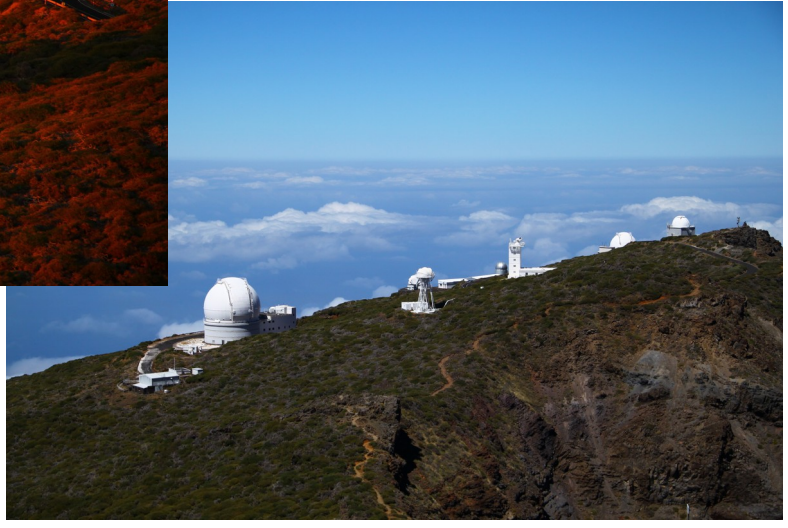


Coupole du télescope Isaas Newton à Herstmonceux (angelterre, début des années 1980).

Salle de contrôle de l'INT à La Palma en 1988.

Télescope William Herschel (WHT)

Spectroscopie multi-objets :
- Redshifts de galaxies d’amas
- Redshifts de lentilles gravitationnelles
(1989-1996)

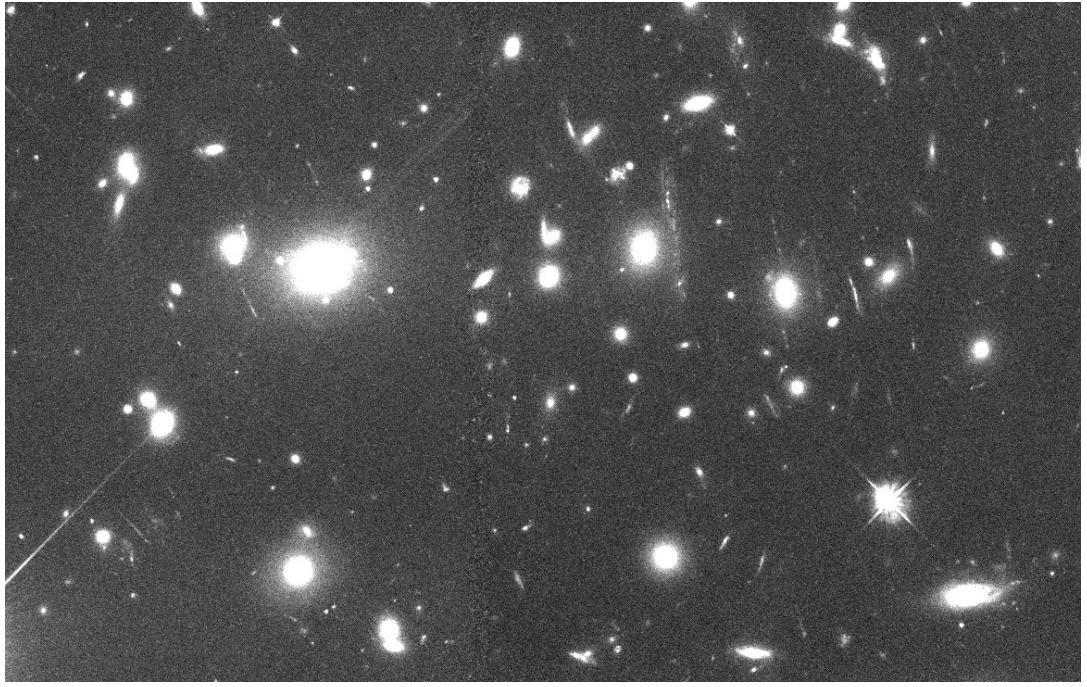


Télescope William Herschel (WHT)

Spectroscopie multi-objets
Redshifts de lentilles gravitationnelles
Arc de A2390

Pello, R., Le Borgne, J.-F., Soucail, G., et al. 1991, ApJ, 366, 405.

Image HST



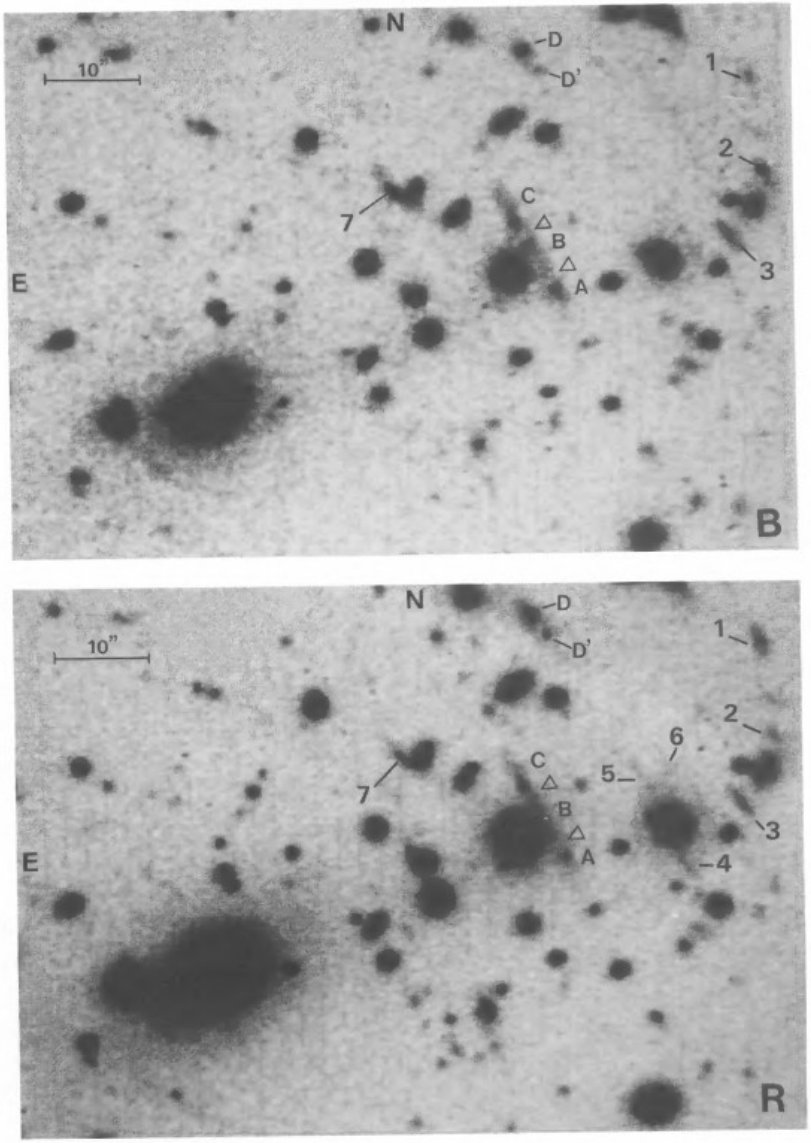


FIG. 1.—Bessel *B* (*top*) and *R* (*bottom*) CCD images of the arc and its surrounding region. These images were obtained at the Canada-France-Hawaii 3.6 m telescope (prime focus). The faint and elongated objects (arclets) are identified (see text and Table 1).

Télescope William Herschel (WHT)

Spectroscopie multi-objets
Redshifts de lentilles gravitationnelles
Arc de A2390 à z=0.913

Pello, R., Le Borgne, J.-F., Soucail, G., et al. 1991, ApJ, 366, 405.

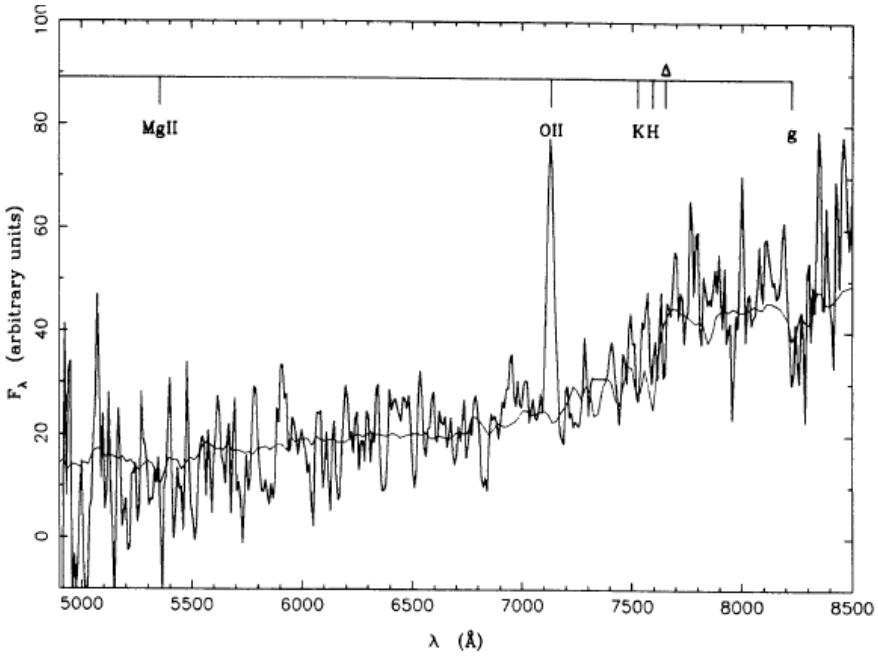


FIG. 5.—Spectrum of object D, showing the same features as the spectrum of the arc.

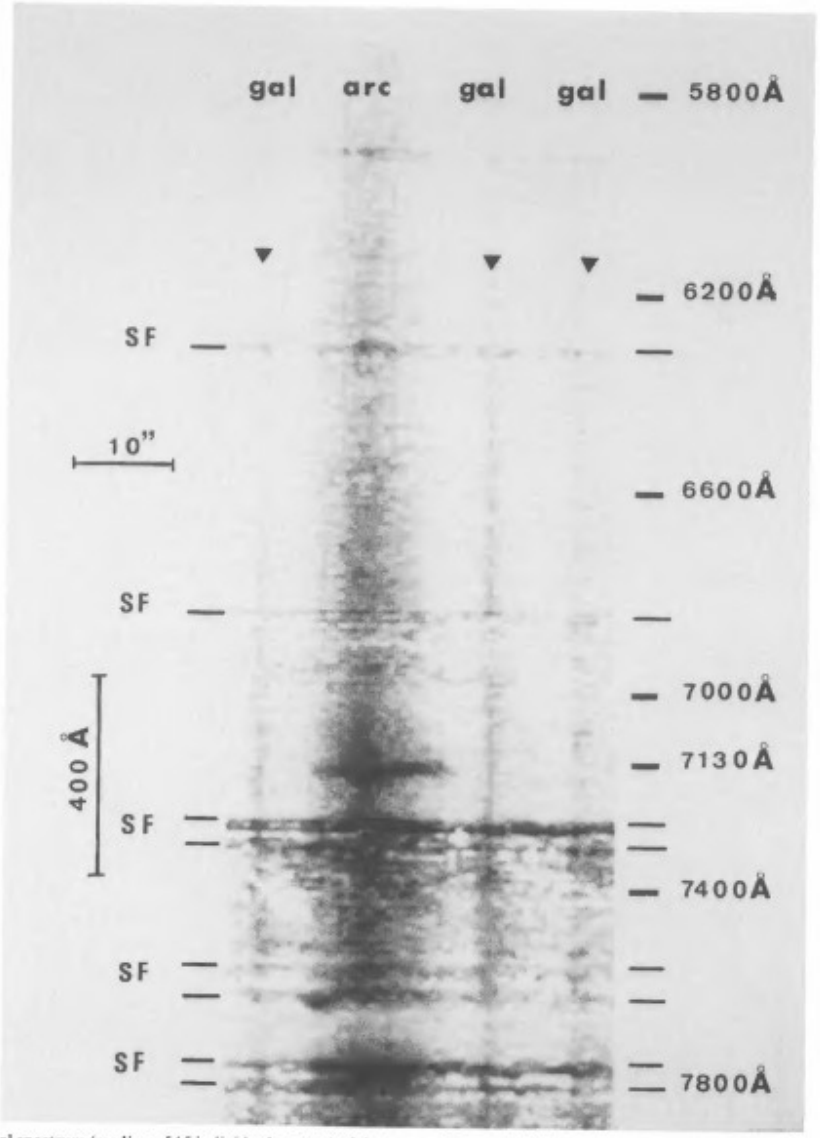


FIG. 2.—Two-dimensional spectrum (median of 15 individual spectra) of the arc and three neighboring objects, showing the 7130 Å emissi
Blue is at the top.

Télescope William Herschel (WHT)

Spectroscopie multi-objets
Redshifts de lentilles gravitationnelles
Arc de A2390

Pello, R., Le Borgne, J.-F., Soucail, G., et al. 1991, ApJ, 366, 405.

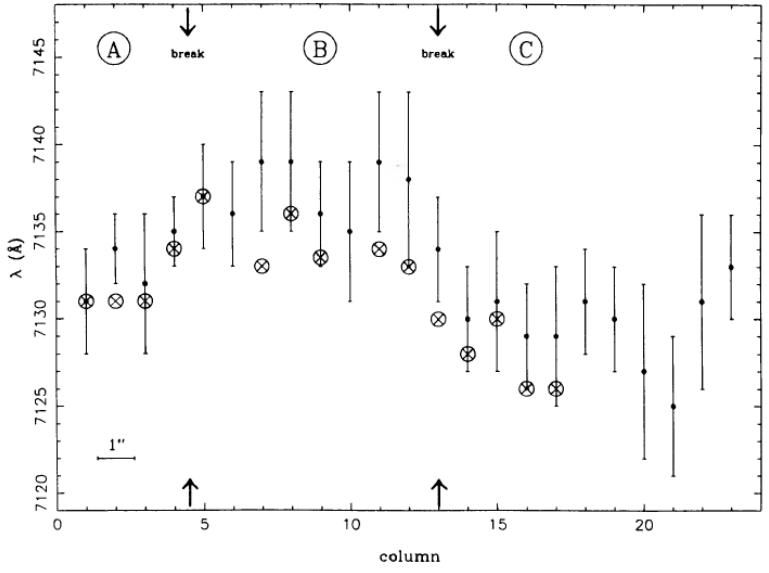


FIG. 4.—Position of the emission-line center along the arc, as obtained from the 15 WHT spectra. The error bars correspond to 1 σ. The origin on the abscissa is taken from the first pixel in region A, and the position of the breaks is indicated by arrows. The result coming from the ESO spectrum are plotted as circled crosses.

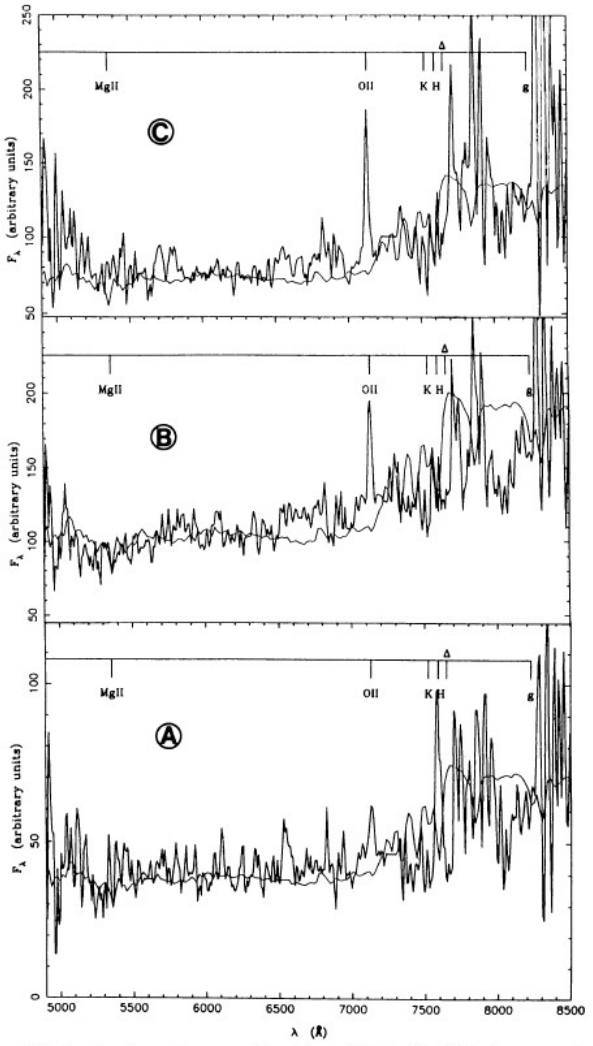


FIG. 3.—Spectra of the arc regions, from A (*bottom*) to C (*top*), compared with a synthetic spectrum of a nonevolved Im galaxy redshifted at $z = 0.91$ (*thin lines*). Each of the spectra is the sum of the columns corresponding to a given region in the two dimensional mean spectrum. The scales in F_λ are in arbitrary units. Different spectral features are identified. The continuum of the synthetic spectra has been normalized in order to fit the observed continua in the range 6000–6500 Å.

Télescope William Herschel (WHT)

Supernova 1995o dans l'amas de galaxies A2218
(redshift 0.17)

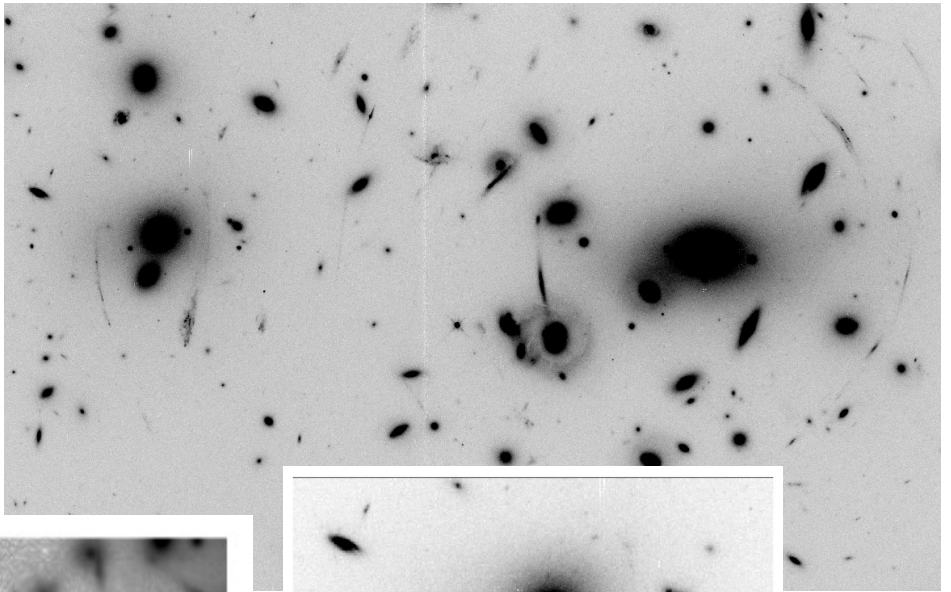
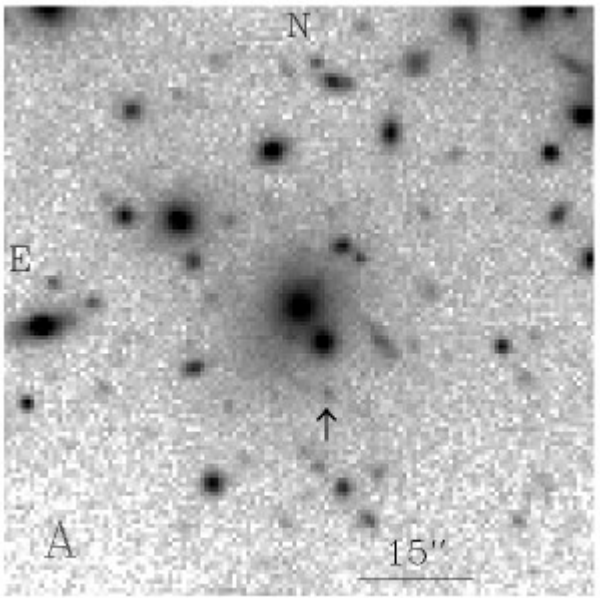
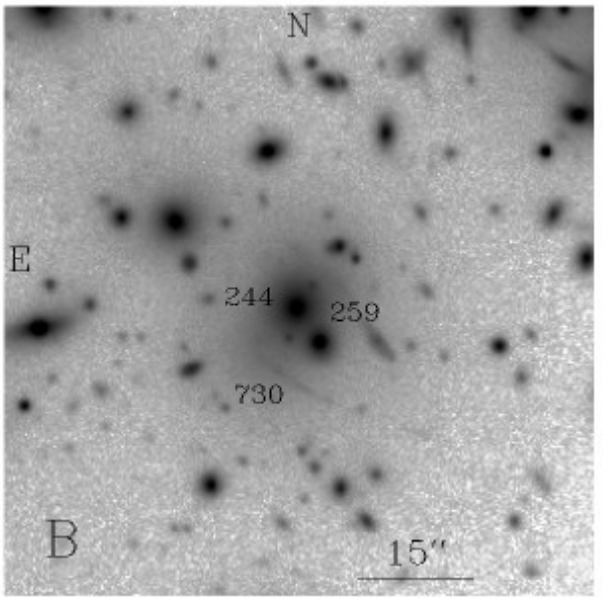


Image HST



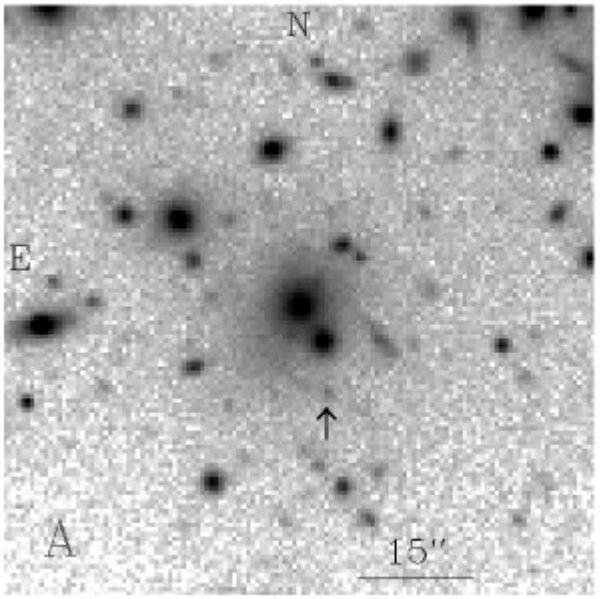


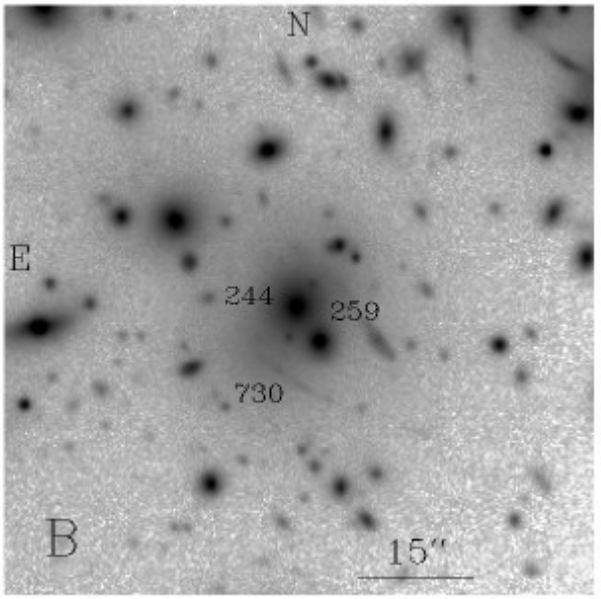
white light ccd frame taken on 1995 may 03, 3h10 UT, with the WHT. The arrow shows the supernova. B: ccd frame taken in August 1991 with the 3.5m telescope at Calar Alto, spain.

http://userpages.irap.omp.eu/~jleborgne/article02.php

Télescope William Herschel (WHT)

Supernova 1995o dans l'amas de galaxies A2218 (redshift 0.17)





white light ccd frame taken on 1995 may 03, 3h10 UT, with the WHT. The arrow shows the supernova. B: ccd frame taken in August 1991 with the 3.5m telescope at Calar Alto, spain.

Circular No. 6172

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MARSDEN@CFA.HARVARD.EDU or GREEN@CFA.HARVARD.EDU (science)

SUPERNOVA 1995O IN ABELL 2218

J.-F. Le Borgne, Observatoire Midi-Pyrenees; B. Sanahuja, University of Barcelona; and S. Maddox, Royal Greenwich Observatory; report their discovery of an apparent supernova located at R.A. = 16h35m56s.121, Decl. = +66o11'43".96 (equinox 2000.0), which is in the cluster Abell 2218 (cf. Abell et al. 1989, Ap.J. Suppl. 70, 1), and is 1" from arc 730 of Pello et al. (1992, A.Ap. 266, 6; note Fig. 7). The discovery was made on CCD images obtained on May 3.13 UT with the William Herschel Telescope (+ Low Dispersion Survey Spectrograph) at La Palma, with the magnitude estimated as R about 22. SN 1995O does not appear on any of numerous frames obtained of this cluster since 1986, the last known images with no sign of the new star being J and K frames taken on 1994 Aug. 18 with the Canada-France-Hawaii Telescope (CFHT) at Mauna Kea. Low-dispersion spectrograms obtained by C. Soubiran (Observatoire de Bordeaux) and E. Friel (Maria Mitchell Observatory) on May 7.49 and 7.51 with the CFHT (+ multi-aperture spectrograph) show some signal between 450 and 900 nm, although the spectra are dominated by sky emission lines at wavelengths longer than 720 nm. Emissions at the redshift of Abell 2218 (z = 0.175) corresponding to features at about 371.2, 464.5, 494.4, 551.1, and 584.8 nm (respectively) in the spectra of the type-Ia supernova 1989B (Wells et al. 1994, A.J. 108, 2233) were identified in the spectra of SN 1995O at 436.2, 545.8, 580.9, 647.5, and 687.1 nm. Likewise, the absorptions in SN 1989B at about 486.2, 504.7, 569.2, and 602.0 nm were identified in SN 1995O at 571.3, 593.0, 668.8, and 707.3 nm.

COMET 71P/CLARK

Visual magnitude estimates: Apr. 1.47 UT, 13.5 (A. Hale, Cloudcroft, NM, 0.41-m reflector); 23.45, 12.9 (C. S. Morris, Pine Mountain Club, CA, 0.26-m reflector); 25.46, 12.4 (Hale); May 10.44, 11.6 (Hale).

NOVA AQUILAE 1995

Visual magnitude estimates: Apr. 21.43 UT, 10.5 (W. G. Dillon, Missouri City, TX); May 1.17, 10.7 (A. Pereira, Cabo da Roca, Portugal); 6.115, 11.7 (P. Schmeer, Bischmisheim, Germany); 9.065, 11.7 (Schmeer).

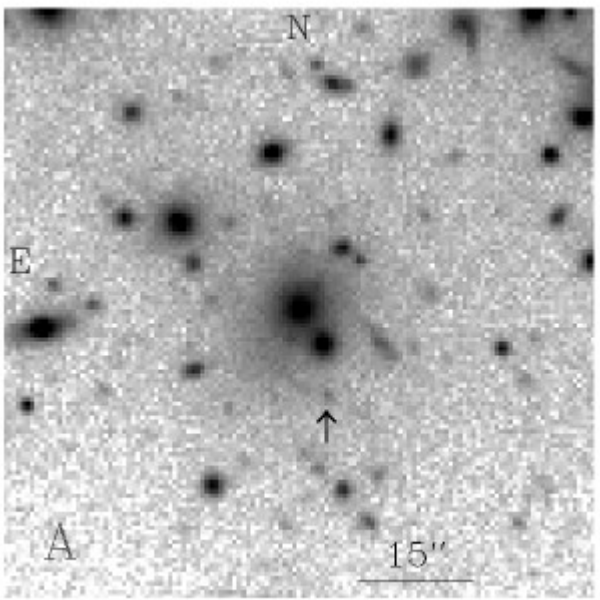
1995 May 11 **(6172)** **Daniel W. E. Green**

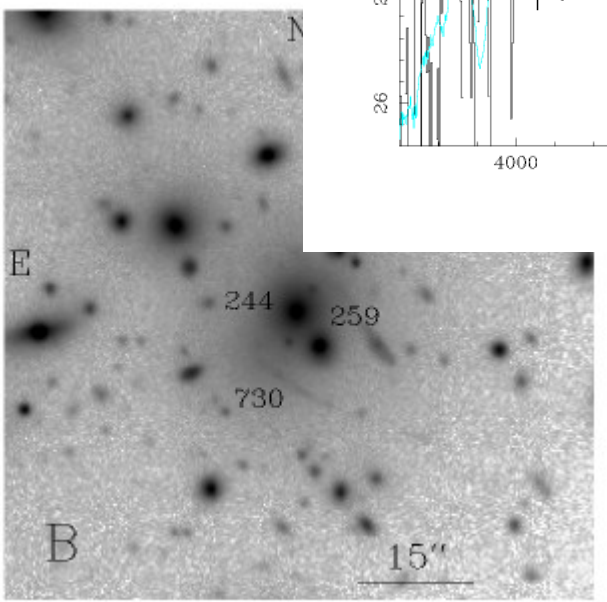
http://userpages.irap.omp.eu/~jleborgne/article02.php

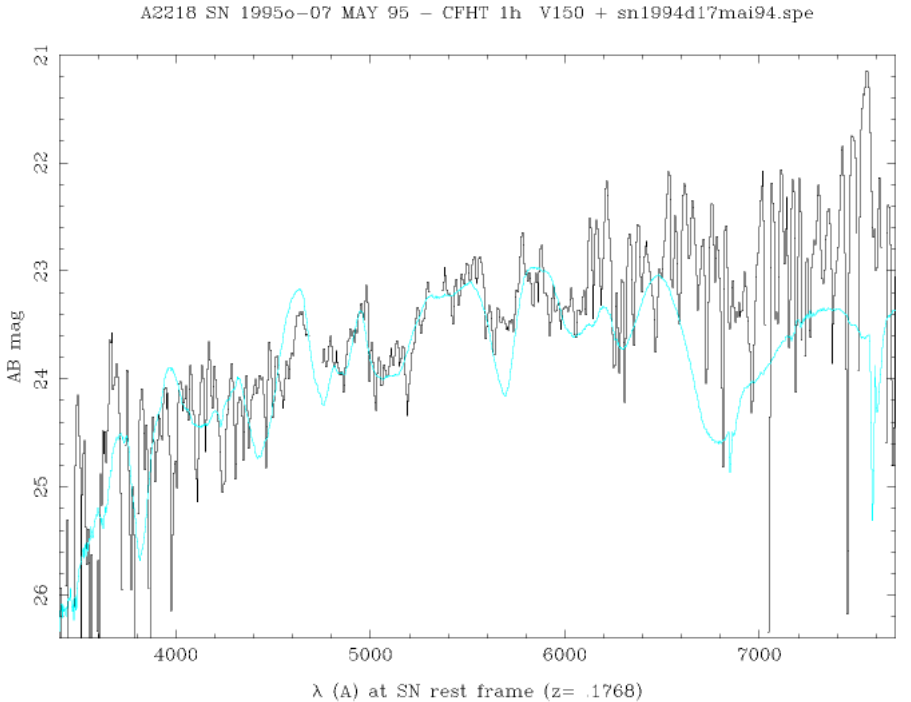
Télescope William Herschel (WHT)

Supernova 1995o dans l'amas de galaxies A2218

Magnitude 24
Redshift 0.1756







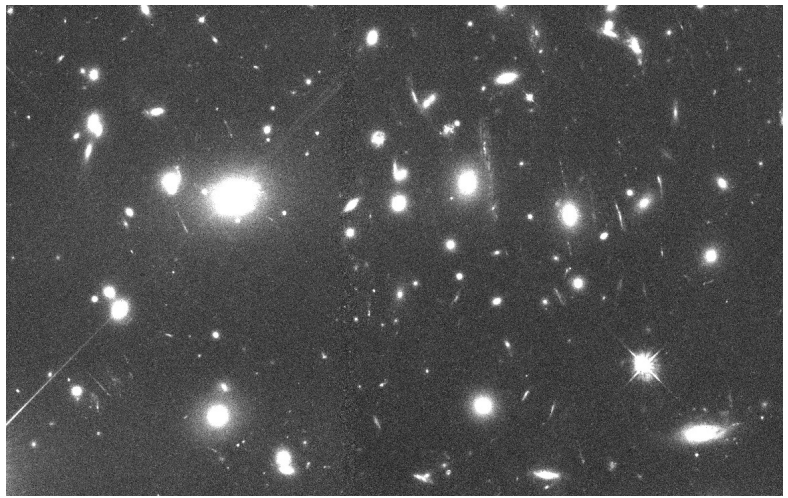
1 hour spectrum of SN1995o obtained on 1995 may 07 with the CFHT. It is compared to the spectrum of SN1994d (in blue) taken on 1994 May 17 (aged 58 days, corrected for a radial velocity of 830 kms-1.

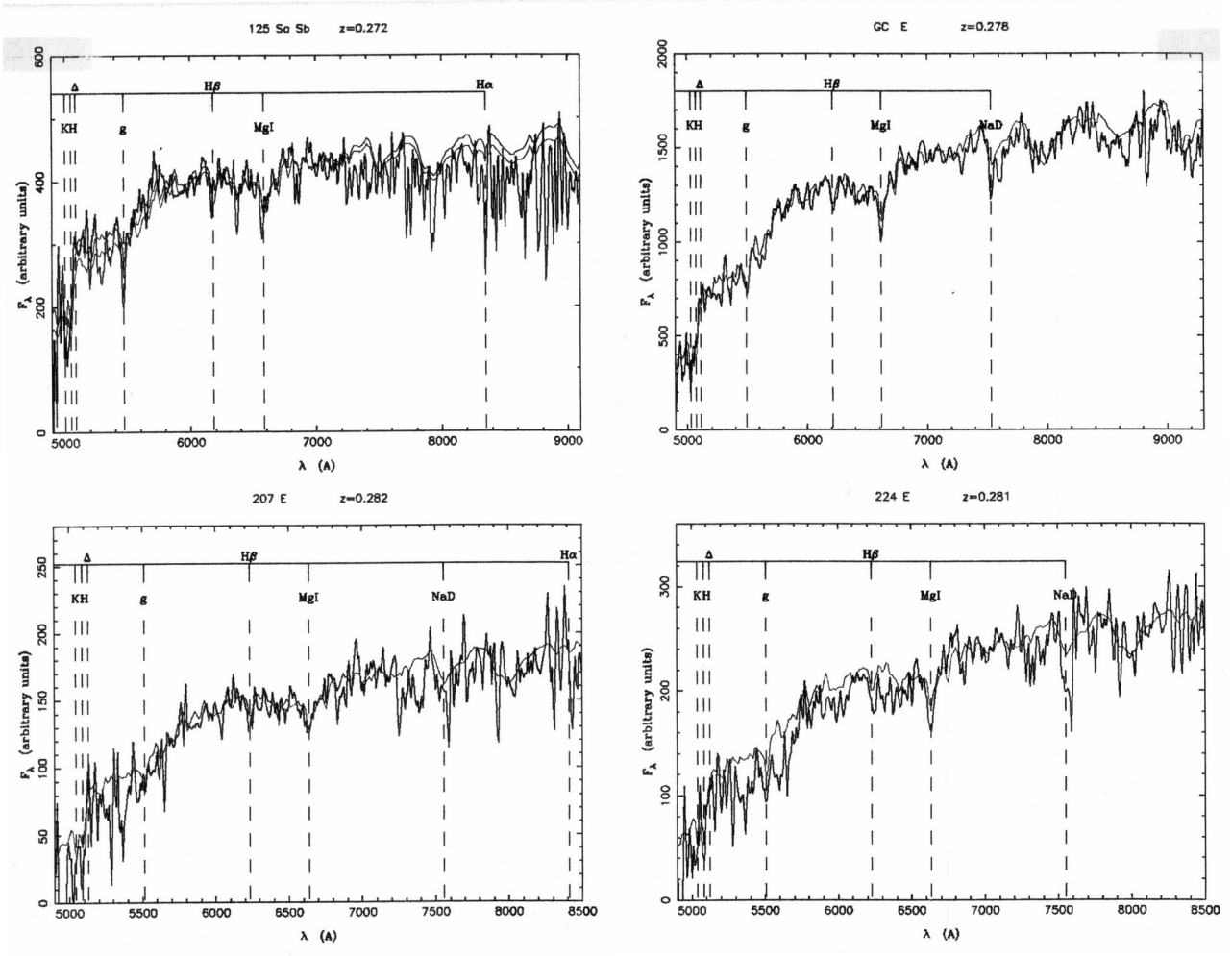
white light ccd frame taken on 1995 may 03, 3h10 UT, with the WHT. The arrow shows the supernova. B: ccd frame taken in August 1991 with the 3.5m telescope at Calar Alto, spain.

http://userpages.irap.omp.eu/~jleborgne/article02.php

Télescope William Herschel (WHT)

Spectres des galaxies des amas
=> dispersion de vitesse
=> masse dynamique de l'amas
(théorème du viriel)





Télescope William Herschel (WHT)

Spectres des galaxies des amas
=> dispersion de vitesse
=> masse dynamique de l'amas
(théorème du viriel)

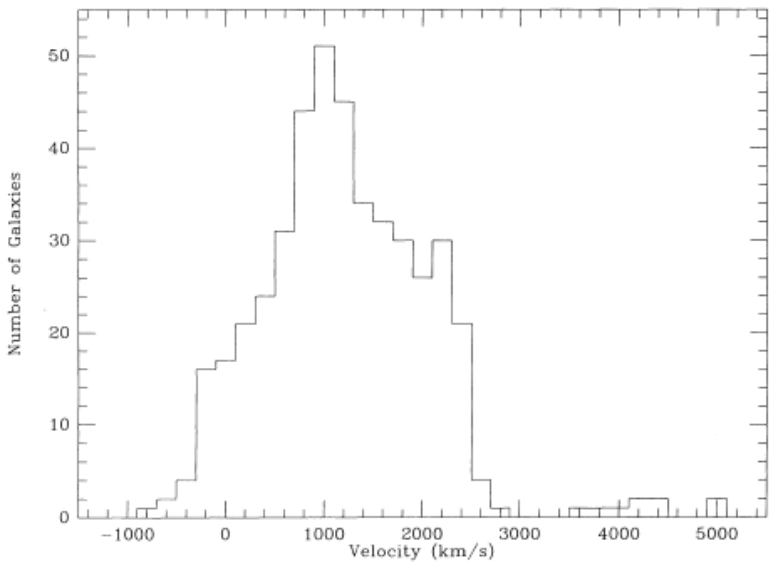
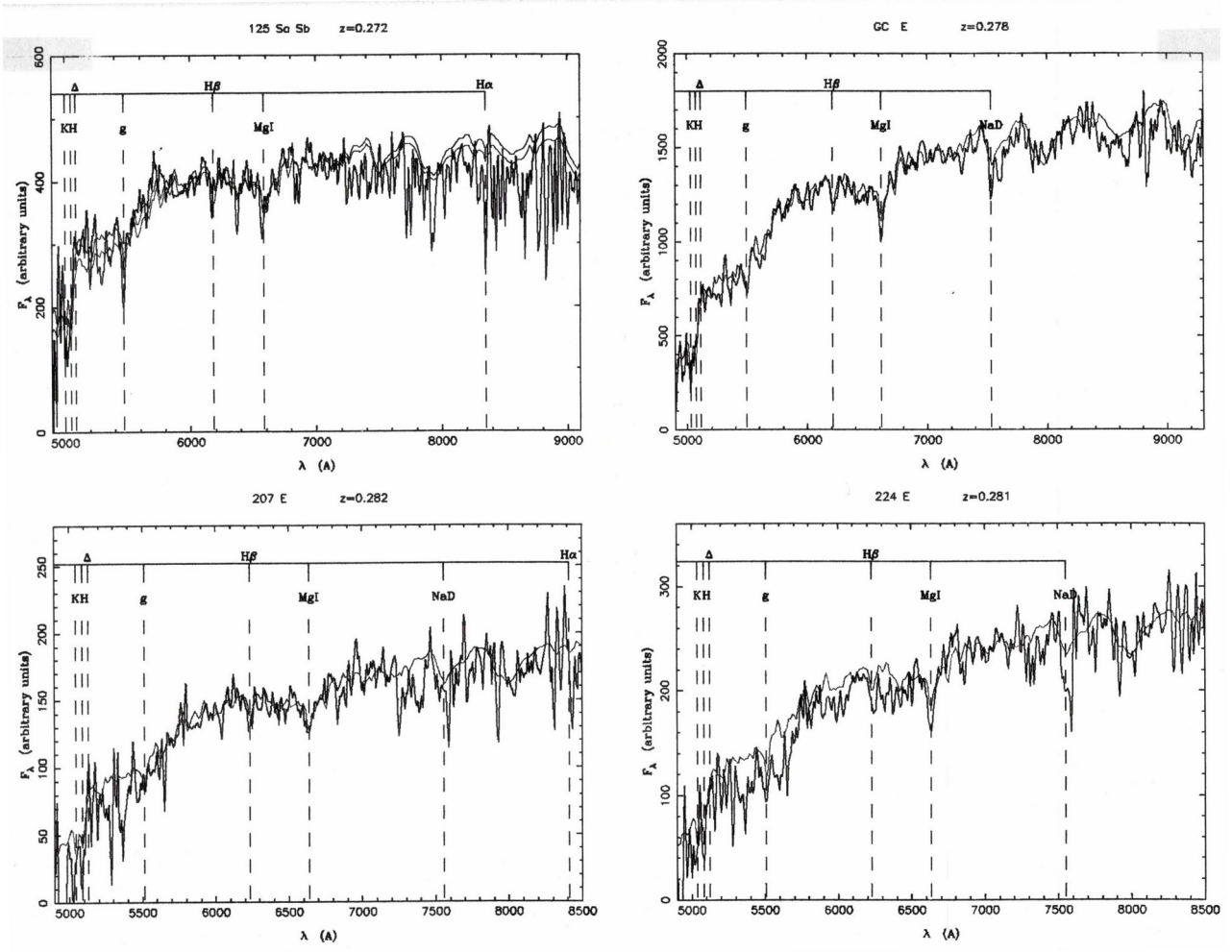


FIG. 1.—Velocity histogram for the Virgo Cluster. Notice the obvious background group at ~4000 km s^{-1}.

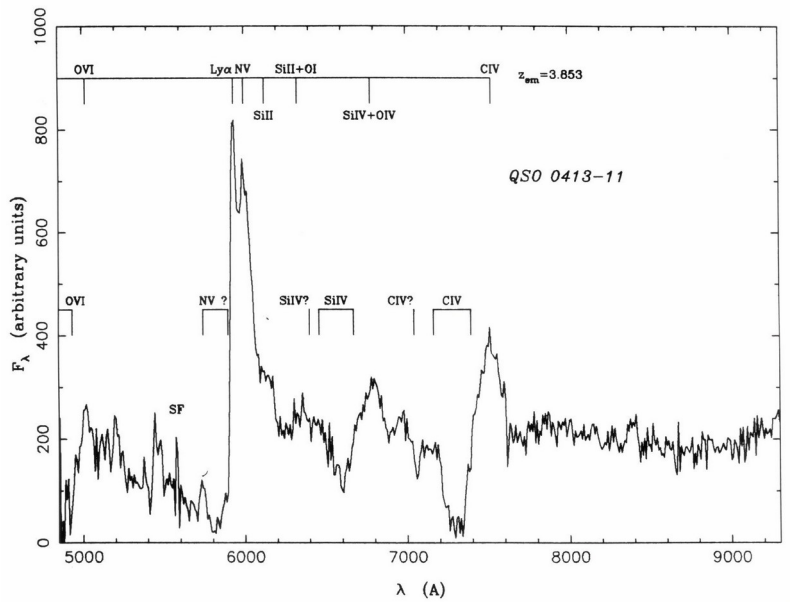
Girardi, M., Biviano, A., Giuricin, G., et al. 1993, ApJ, 404, 38.



Télescope William Herschel (WHT)

Quasar à grand redshift au-delà de l'amas de galaxies A483

Magnitude B=22.0, R=19.4



Le Borgne, J.F., Pello, R., Sanahuja, B., et al. 1990, Astronomy and Astrophysics, 229, L13.

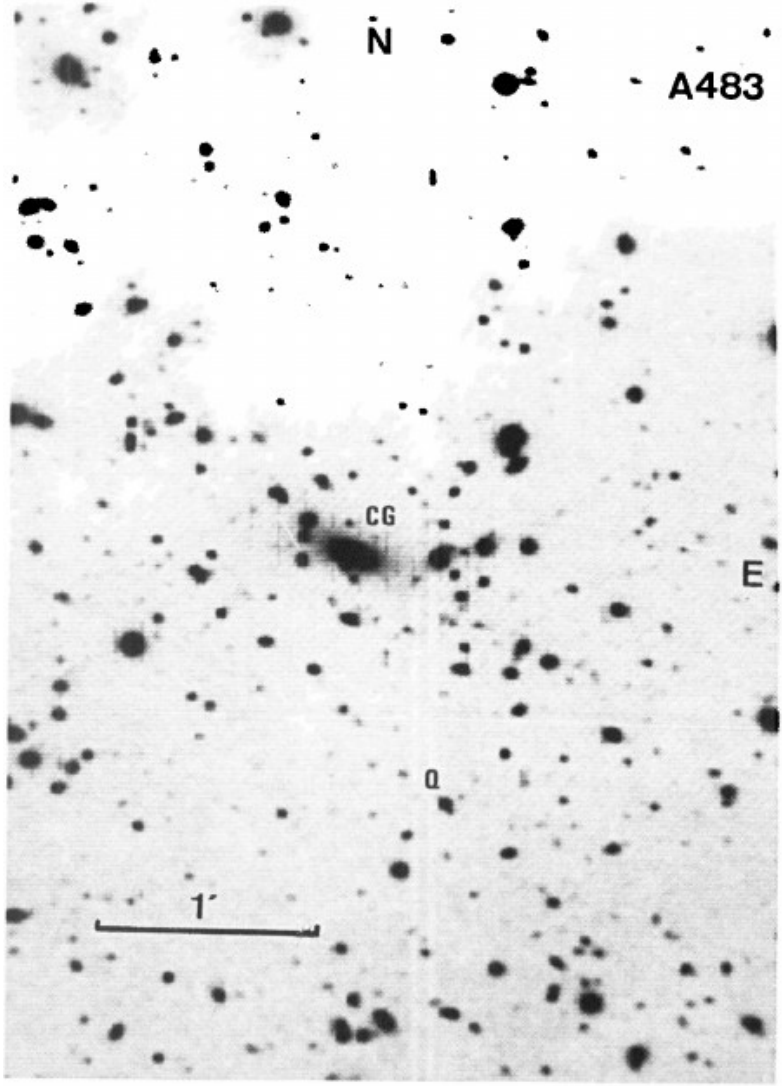
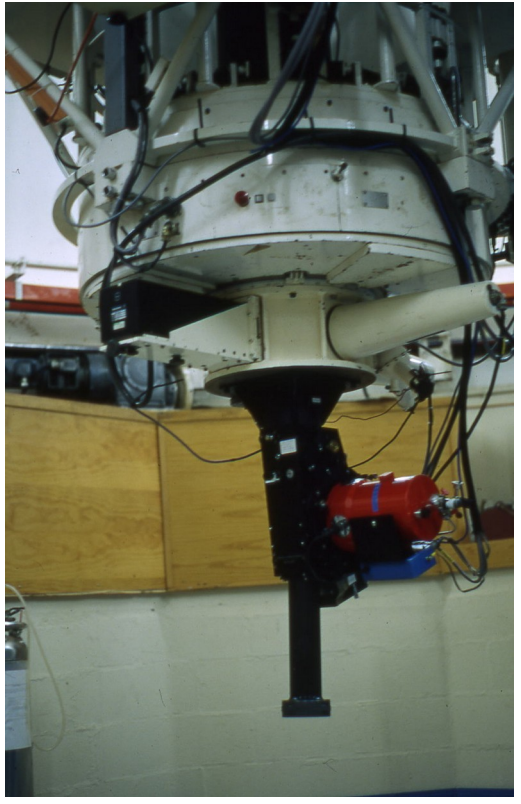


Fig. 2. *ESO R CCD frame of the cluster of galaxies Abell 483. North is up, east is right. The central galaxy of the cluster is indicated as "CG" and the quasar as "Q".*

Télescope Jacobus Kapteyn (JKT)

Stelib : bibliothèque de spectres stellaires pour les spectres synthétiques et les modèles d'évolution des galaxies (1994).



http://userpages.irap.omp.eu/~jleborgne/stelib_web2005/

Télescope Jacobus Kapteyn (JKT)

Stelib : bibliothèque de spectres stellaires pour les spectres synthétiques et les modèles d'évolution des galaxies

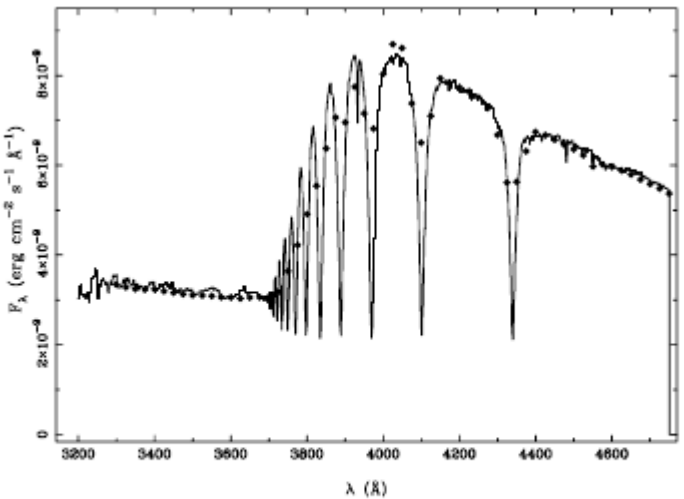


Fig. 5. Comparison of Vega spectrum in the UV with published SED (filled circles).

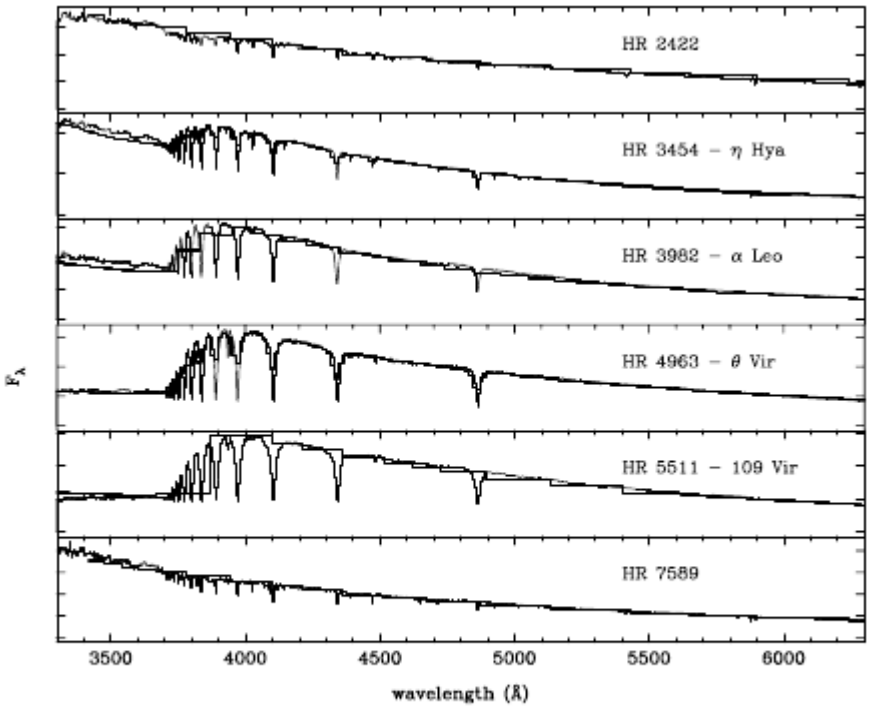


Fig. 6. Comparison of calibrated standard stars spectra observed at JKT with published SED (bold curve).

Le Borgne, J.F., Bruzual, G., Pello, R., et al. 2003, A&A, 402, 433.
http://userpages.irap.omp.eu/~jleborgne/stelib_web2005/

Télescope Jacobus Kapteyn (JKT)

Stelib : bibliothèque de spectres stellaires pour les spectres synthétiques et les modèles d'évolution des galaxies

Comparaison de spectres de galaxies avec des spectres synthétiques utilisant la bibliothèque STELIB.

Le Borgne, J.F., Bruzual, G., Pello, R., et al. 2003, A&A, 402, 433.
http://userpages.irap.omp.eu/~jleborgne/stelib_web2005/

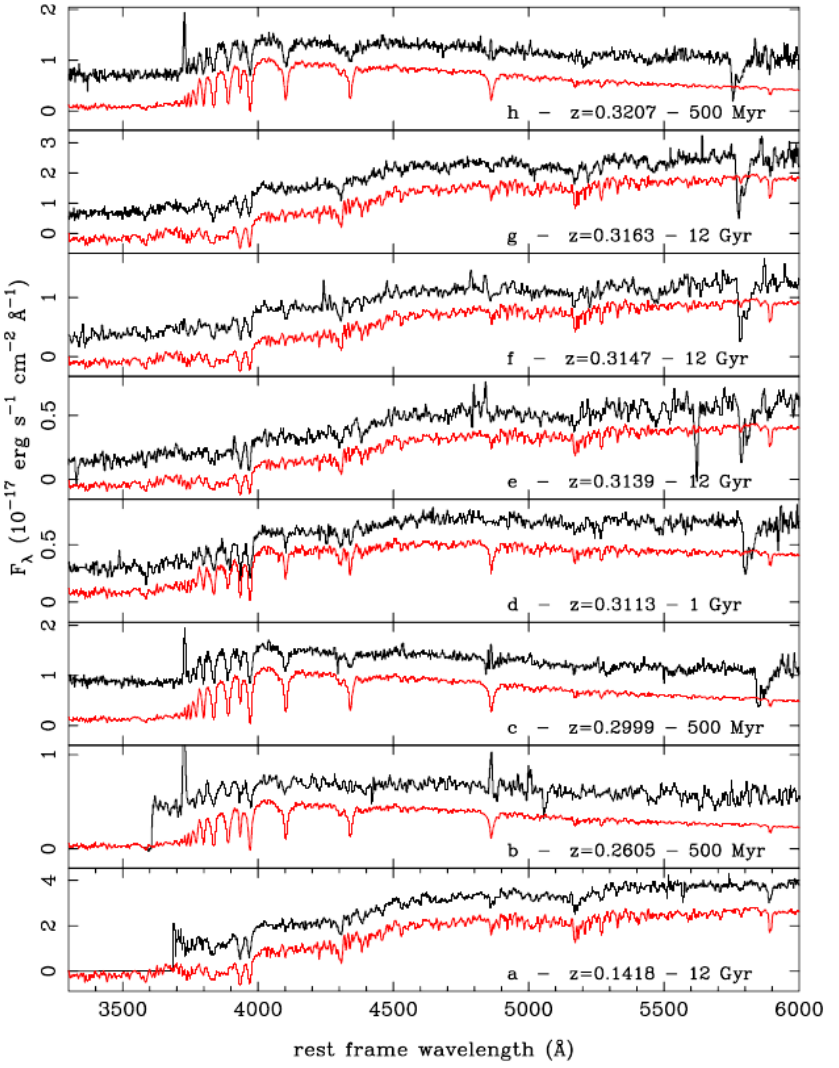
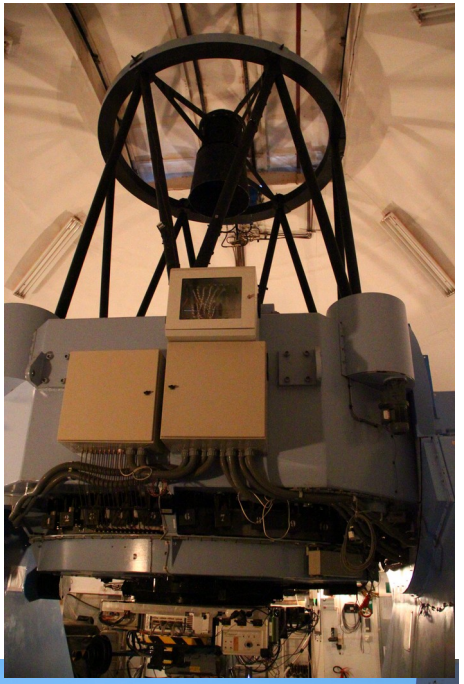


Fig. 10. Comparison of galaxy spectra, in and foreground of the cluster of galaxies AC 114, with solar metallicity SSP synthetic spectra. See Table 12 for identification. The observed spectra are not corrected for atmospheric molecular bands (the main one appears at about 5800 Å for $z \sim 0.3$ galaxies). The observed spectra appear as a black line, and the model as a grey line. The model spectra are shifted downward by 20% of the scale for clarity. The legends in the figure give the observed redshift of the galaxies and the age of the models. The contribution of emission lines in the Balmer series is visible on observed spectra b, c and h.

Nordic Optical Telescope (NOT)

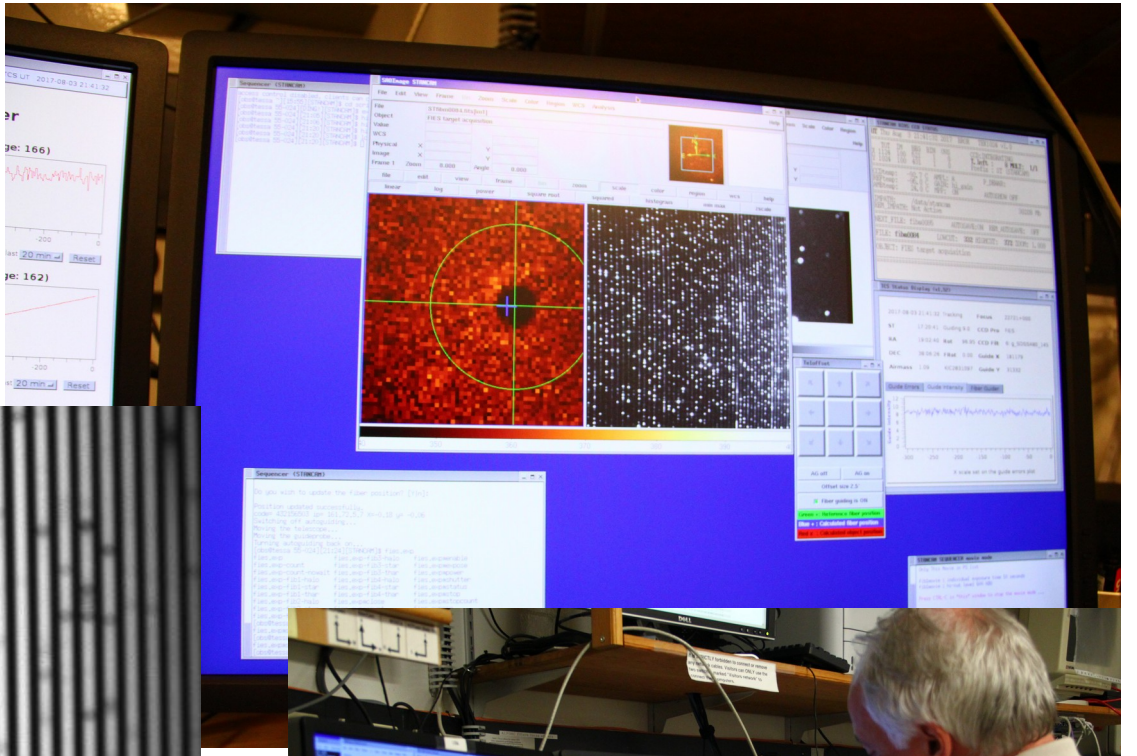
Spectroscopie d’étoiles à haute ou moyenne résolution. (2017-2018)

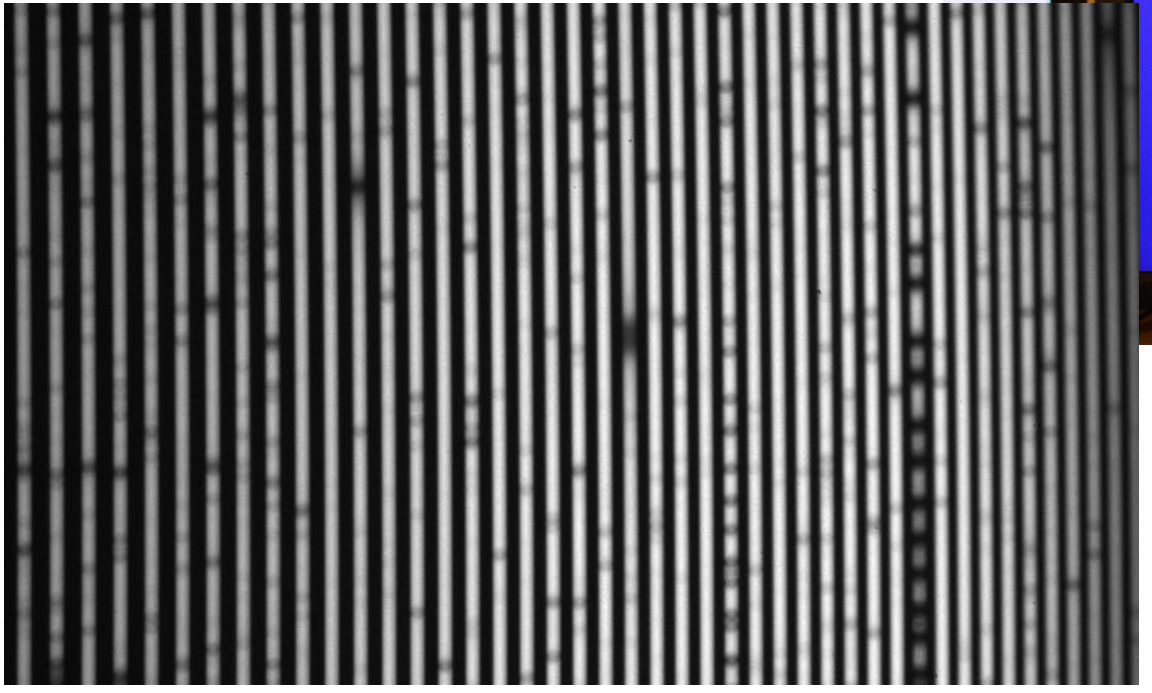


Nordic Optical Telescope (NOT)

Spectroscopie d’étoiles à haute ou moyenne résolution. (2017-2018)

Spectrographe « échelle »



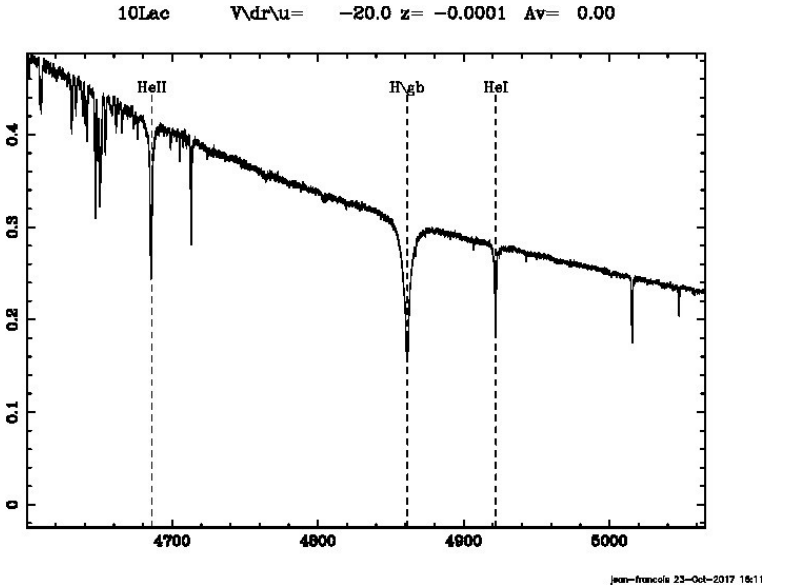


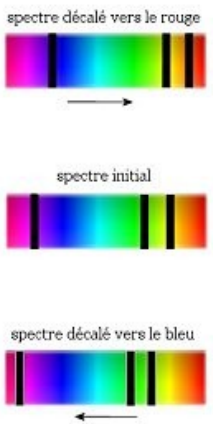
Poretti, E., Le Borgne, J.F., Correa, M., et al. 2025, A&A, 703, A286.

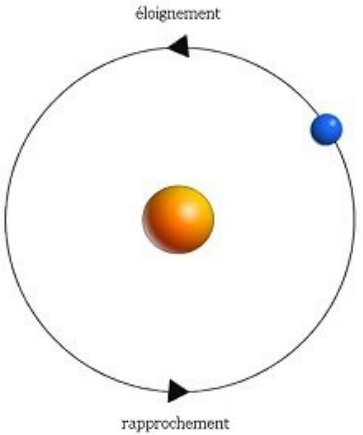
Nordic Optical Telescope (NOT)

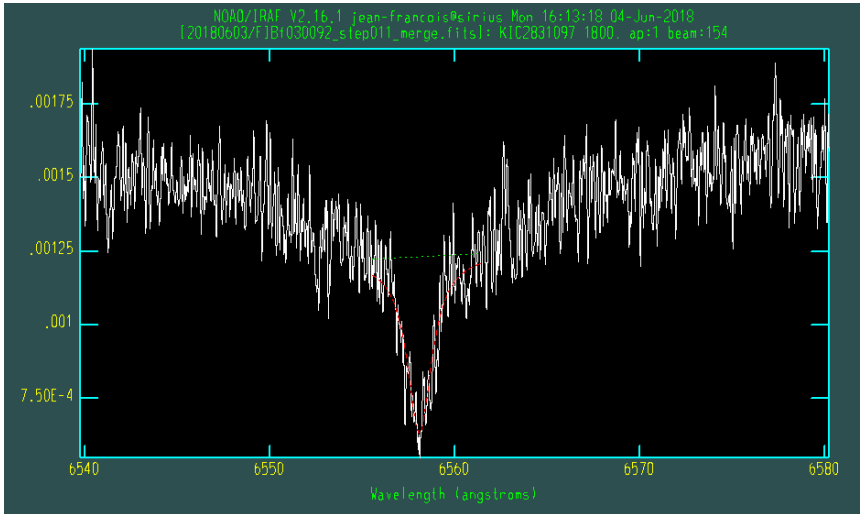
KIC 2831097 : étoile pulsante de type RR Lyr.
Possible composante d'un système binaire.

Vérification par la mesure des vitesses radiales









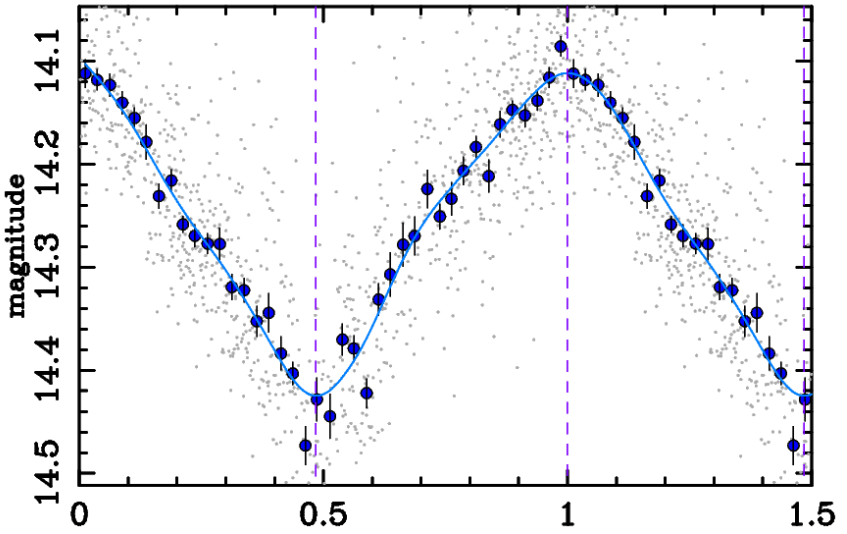
http://lericque.simon.free.fr/MON%20SITE/ARTICLES/etoiles%20doubles/etoilesdoubles.htm

Poretti, E., Le Borgne, J.F., Correa, M., et al. 2025, A&A, 703, A286.

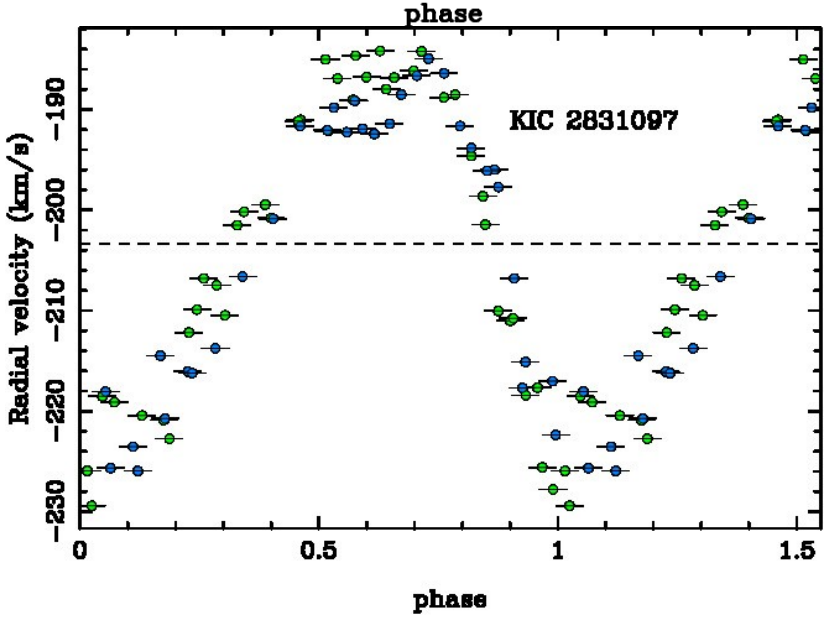
Nordic Optical Telescope (NOT)

KIC 2831097 : étoile pulsante de type RR Lyr.
Possible composante d'un système binaire.

Pas de différences aux deux quadratures estimées en 2017 et 2018
(différence de vitesse ~100 km/s) :
=> Pas un système binaire !



Courbe de lumière.
Tel. 254mm, Marseille



Courbe de vitesse radiale (NOT).
Bleu : 2017
Vert : 2018

Poretti, E., Le Borgne, J.F., Correa, M., et al. 2025, A&A, 703, A286.