Hogyan legyünk csillagászok?

Kiss László (MTA CSFK KTM CSI)

Horgostól a csillagokig...

Kiss László (MTA CSFK KTM CSI)

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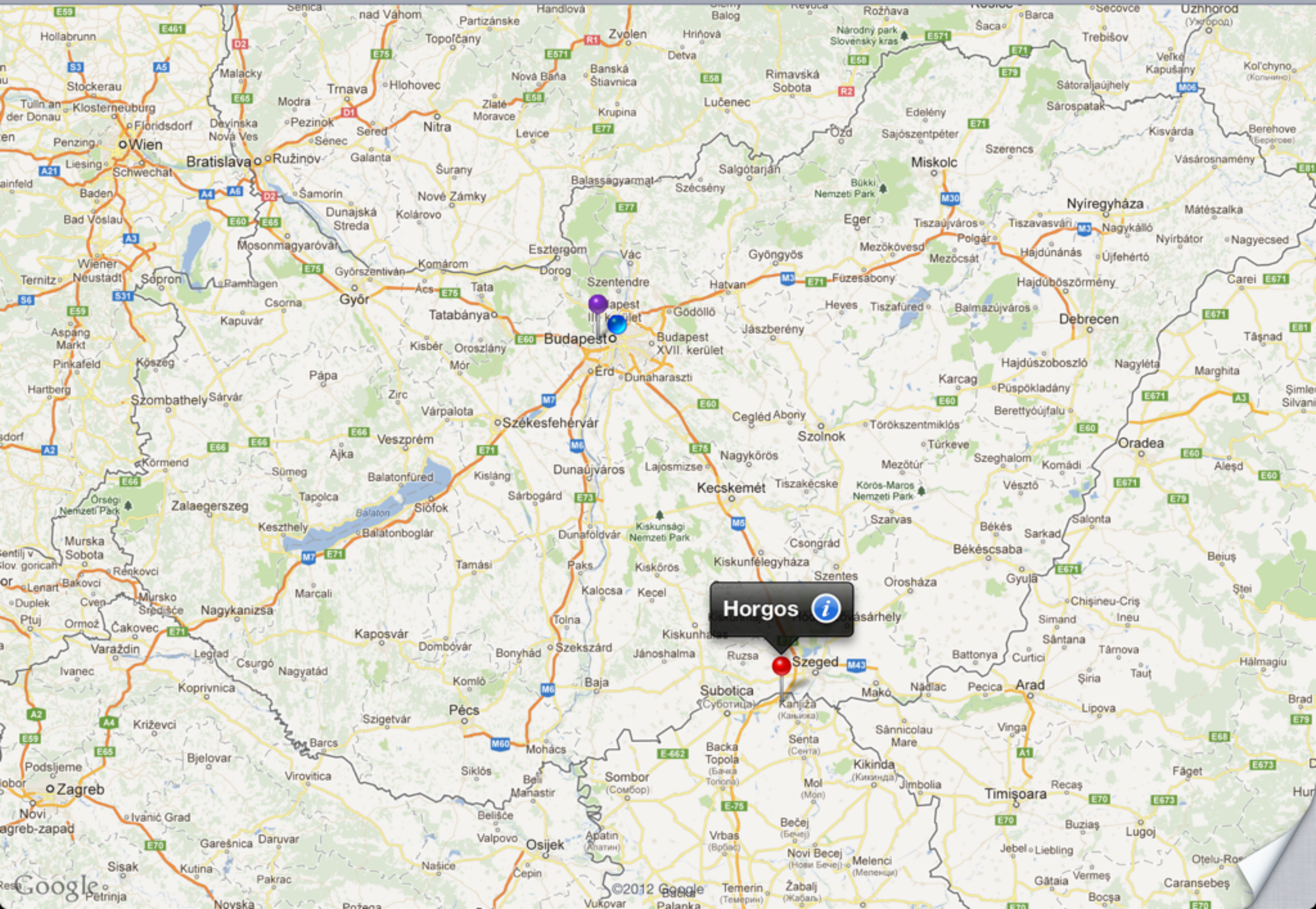
Keresés | Útvonaltervek

Horgos



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Keresés | Útvonaltervek

Subotica

Szabadka

Subotica (Суботица)

Palić (Палић)

Palić Lake (Palićko Jezero)

Aleksandrovo

Bikovo (Биково)

Supljak (Шупљак)

Supljak-Ludaš put

Bačka Vinogradi (Бачки Виногради)

Hajdukovo (Хајдуково)

Horgoš (Хоргош)

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Martonoš (Мартонош)

Röszke

Szeged

Kiskundorozsma

Domaszék

Mórahalom

Ásotthalom

Zákányszék

Bordány

Üllés

Forráskút

Zsombó

Szatymaz

Sándorfalva

Sándorfalvi Fehér-tó

Algyő

Tápé

Deszk

Makai út

Bajai út

Újszentiván

Tiszasziget

Kübekháza

Beba Veche

Majdan (Мајдан)

Oroslamos

Banatsko Aranđelovo (Банатско Аранђелово)

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Csongrád

Bács-Kiskun

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Kelebia

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Tavankut

Mala Bosna (Мала Босна)

Ljutovo (Љутово)

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Čantavirski put

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Szegedtől Sydney-ig

- 1996: JATE, okleveles fizikus
- 1996-1999: SZTE, PhD hallgató
- 2000-2002: SZTE oktató-kutató
- 2002-...: Univ. Of Sydney

  posztdoktori ösztöndíj: vándorlás a világban

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Keresés | Útvonaltervek

Subotica

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Egy kis Sydney

Siding Spring Obszervatórium

Skymapper
12" (def.)
40"
2.3m
24"
HAT-South
p1
p2
p3
p4
ROTSE
Uppsala
YSTAR
UNSW APT
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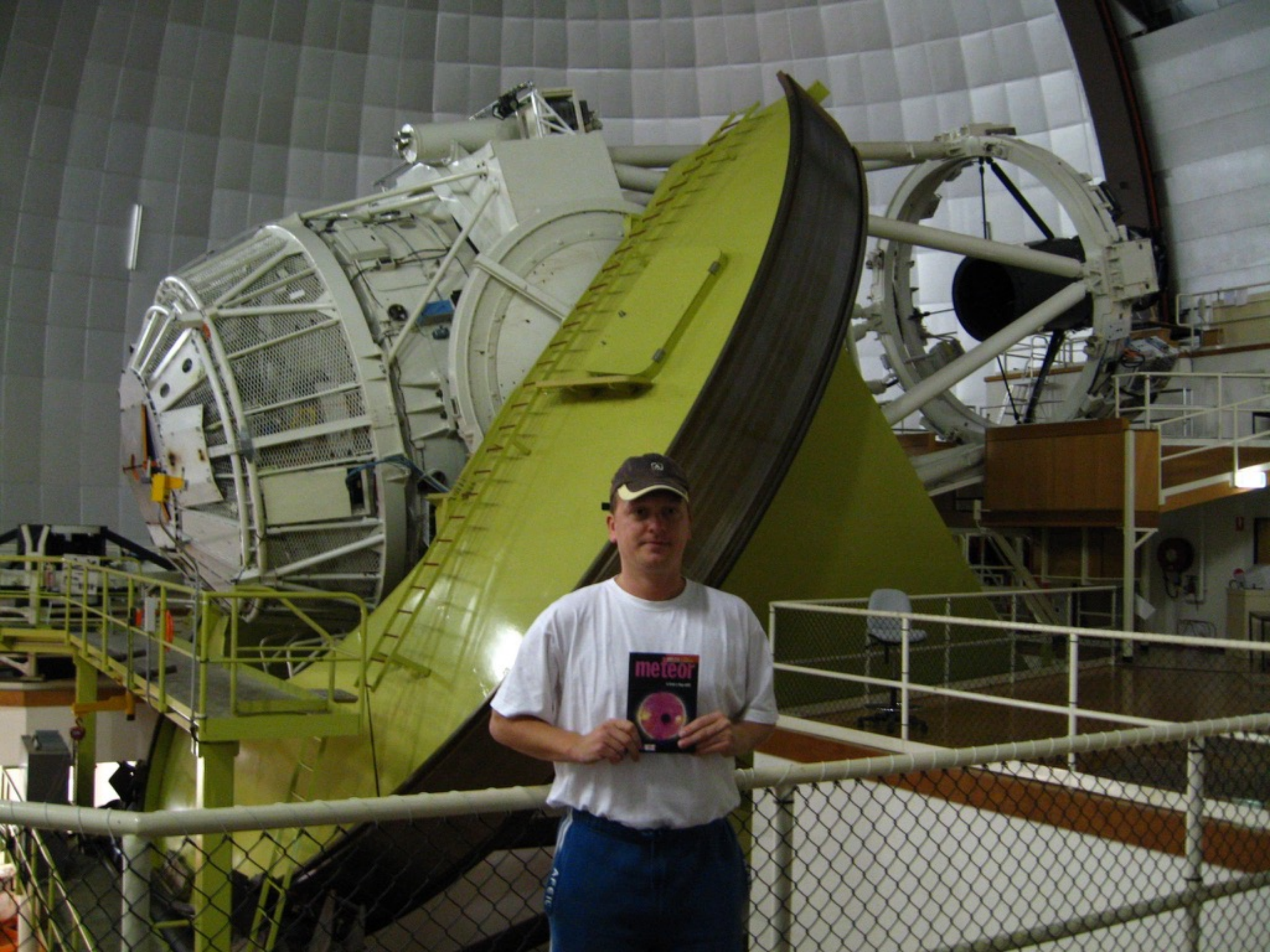
RESTRICTED
AREA


meteor

Takács - Kiss (Uni. Sydney) - Szabó (Uni. Szeged)

Sydney-től Budapestig

- 2009: MTA Lendület Fiatal Kutatói Program
- 2010: tud. igh. + 13 fős csoport
- 2009-2014: kb. 600M Ft
- 2013. május: az MTA levelező tagja

Lendület felhívás: mta.hu, 2009. jan. 14.

MAGYAR TUDOMÁNYOS AKADÉMIA
ELNÖK
1051 BUDAPEST, ROOSEVELT TÉR 9.
TELEFON: 332-7176 FAX: 332-8943

Tisztelt Igazgató Úr!

A Magyar Tudományos Akadémia 2009. évi költségvetésében kiemelt előirányzatként tervezett keretből néhány új kutatóintézeti kutatócsoport létrehozását szeretném biztosítani. A rendelkezésre álló összeg – legfeljebb 240 millió Ft – erejéig felhívást teszek közzé új kutatócsoportok létrehozására az MTA kutatóintézeteiben.

Felhívás új kutatócsoportok létrehozására

A Magyar Tudományos Akadémia elnöke felhívást tesz közzé új kutatócsoportok létrehozására az MTA kutatóintézeteiben. Ennek célja a Magyar Tudományos Akadémia kutatóintézeteinek és kutatócsoportjainak dinamikus megújítása, a kimagasló teljesítményű fiatal kutatóknak az MTA kutatóintézeteiben megújítandó, nemzetközileg elismert és rangos témákba történő bekapcsolása, a szakmai teljesítményük alapján tehetség-utánpótlást jelentő fiatal kutatók önálló kutatóvá válásának, saját új tudományos irányvonaluk kialakításának és kutatócsoportjuk megalapításának támogatása.

Budapest, 2009. január 12.

Köszönti

Pálinkás József

Lendület pályázat: 2009. március 31.

Lendület Fiatal Kutatói Program

Bolygórendszerek fejlődése más csillagok körül

Kiss L. László, az MTA doktora

Senior Research Fellow, The University of Sydney, Ausztrália
e-mail: laszlo@physics.usyd.edu.au

Lendület eredmény: május 15.

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Date: 2009-05-15 15:19

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Mielőbbi jelentkezését várva

Szívélyes üdvözlettel

Bolygórendszerek fejlődése más csillagok körül

Kiss László

MTA KTM CSKI, Lendület Fiatal Kutatói Program

Space Agency–European Southern Observatory (ESA-ESO) Working Group Report no. 4, Paris, 2008].
32. G. Torres, J. Andersen, A. Giménez, *Astron. Astrophys. Rev.* **18**, 67 (2010).
33. P. Marigo *et al.*, *Astron. Astrophys.* **482**, 883 (2008).
34. L. Girardi, M. A. T. Groenewegen, E. Hatziminaoglou, L. da Costa, *Astron. Astrophys.* **436**, 895 (2005).
35. A. Miglio *et al.*, *Astron. Astrophys.* **503**, L21 (2009).
36. Kepler is a NASA discovery class mission, which was launched in March 2009 and whose funding is provided by NASA's Science Mission Directorate. The authors thank the entire Kepler team, without whom these results would not be possible. The asteroseismology program of Kepler is being conducted by the Kepler Asteroseismic Science Consortium.

Supporting Online Material
www.sciencemag.org/cgi/content/full/332/6026/213/DC1
Materials and Methods
Figs. S1 to S3
References

16 December 2010; accepted 22 February 2011
10.1126/science.1201827

HD 181068: A Red Giant in a Triply Eclipsing Compact Hierarchical Triple System

A. Derekas,[1,2*] L. L. Kiss,[2,3] T. Borkovits,[4,5] D. Huber,[3] H. Lehmann,[6] J. Southworth,[7] T. R. Bedding,[3] D. Balam,[8] M. Hartmann,[6] M. Hrudkova,[6] M. J. Ireland,[3] J. Kovács,[9] Gy. Mező,[2] A. Moór,[2] E. Niemczura,[10] G. E. Sarty,[11] Gy. M. Szabó,[2] R. Szabó,[2] J. H. Telting,[12] A. Tkachenko,[6] K. Uytterhoeven,[13,14] J. M. Benkő,[2] S. T. Bryson,[15] V. Maestro,[3] A. E. Simon,[2] D. Stello,[3] G. Schaefer,[16] C. Aerts,[17,18] T. A. ten Brummelaar,[16] P. De Cat,[19] H. A. McAlister,[16] C. Maceroni,[20] A. Mérand,[21] M. Still,[15] J. Sturmann,[16] L. Sturmann,[16] N. Turner,[16] P. G. Tuthill,[3] J. Christensen-Dalsgaard,[22] R. L. Gilliland,[23] H. Kjeldsen,[22] E. V. Quintana,[24] P. Tenenbaum,[24] J. D. Twicken[24]

Hierarchical triple systems comprise a close binary and a more distant component. They are important for testing theories of star formation and of stellar evolution in the presence of nearby companions. We obtained 218 days of Kepler photometry of HD 181068 (magnitude of 7.1), supplemented by ground-based spectroscopy and interferometry, which show it to be a hierarchical triple with two types of mutual eclipses. The primary is a red giant that is in a 45-day orbit with a pair of red dwarfs in a close 0.9-day orbit. The red giant shows evidence for tidally induced oscillations that are driven by the orbital motion of the close pair. HD 181068 is an ideal target for studies of dynamical evolution and testing tidal friction theories in hierarchical triple systems.

The Kepler space mission is designed to observe continuously more than 10^5 stars, with the ultimate goal of detecting a sizable sample of Earth-like planets around main-sequence stars (*1*). We obtained 218 days of Kepler

nesses, so that when the BC pair is in front of A, their mutual eclipses do not change the total amount of light coming from the system (in accordance with the nearly equal depths of the two deep minima). When the BC pair is in front of A, the

over, almost all flares appear right after the shallower minimum of the BC pair, suggesting that this activity might be related to the close pair.

We looked for optically resolved companion(s) with a 1-m telescope [section 1.1 of (*6*)] but found none. We also obtained 38 high-resolution optical spectra to measure the orbital reflex motion of the A component (*6*) (fig. S1). The orbital parameters for the wider system (Table 1) reveal that star A revolves on a circular orbit, which has an orbital period twice the separation of the two consecutive flat-bottomed minima in the light curve (*6*). Long-baseline interferometry using the PAVO (Precision Astronomical Visible Observations) beam combiner (*8*) at the CHARA [Center for High Angular Resolution Astronomy (*9*)] Array show that the angular diameter of HD

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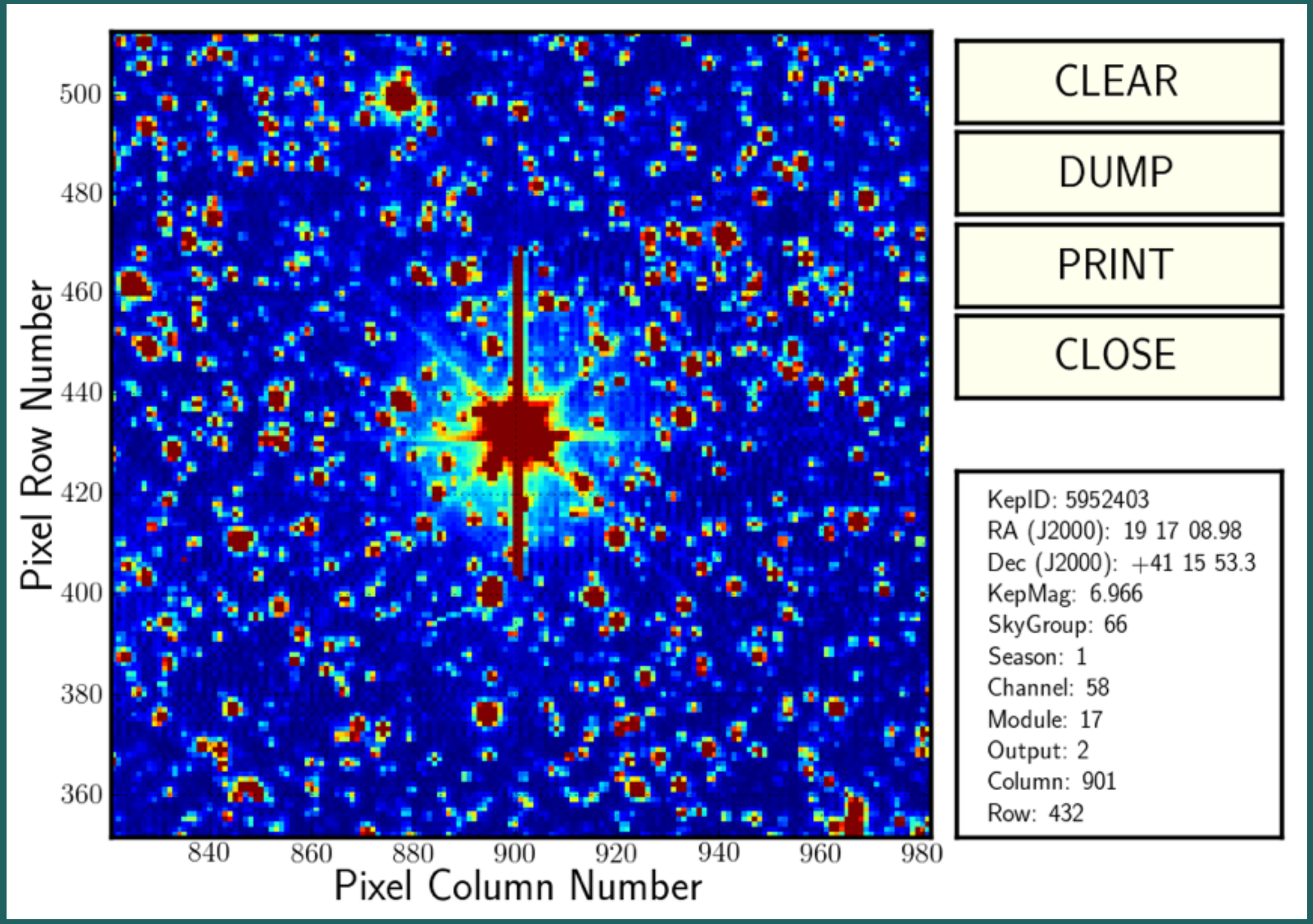
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960
980
Pixel Column Number
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CLOSE
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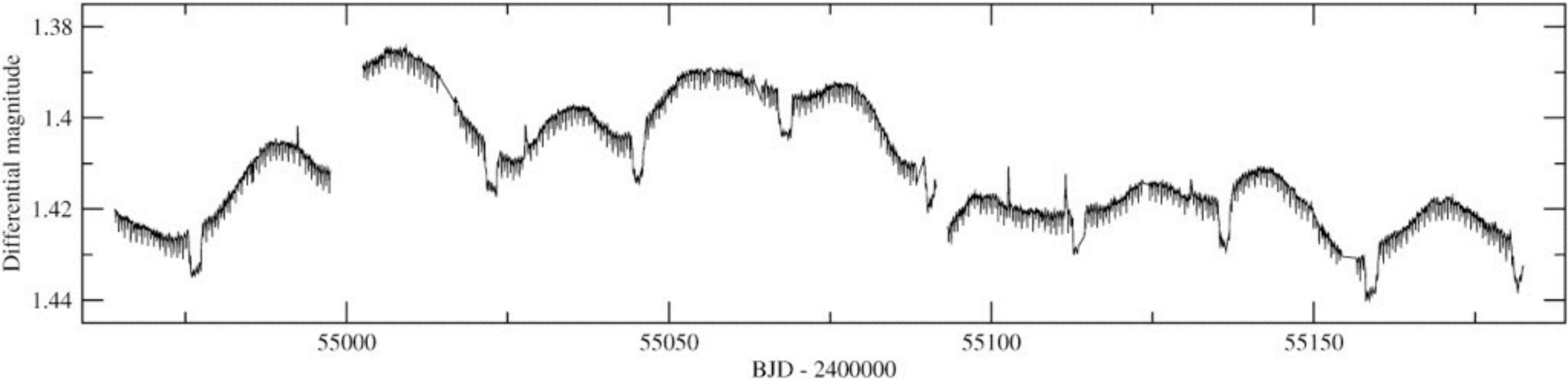
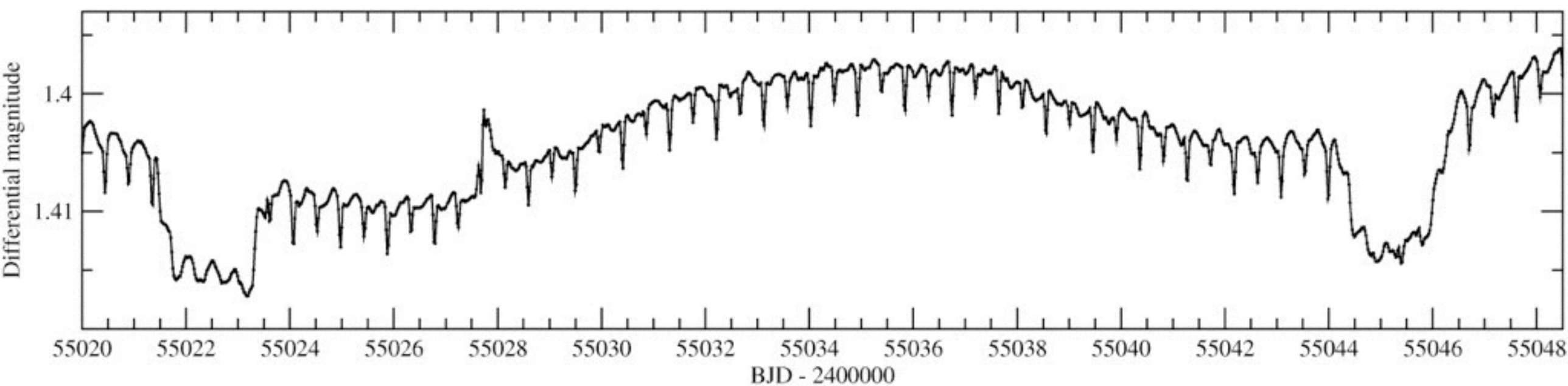
RA (J2000): 19 17 08.98
Dec (J2000): +41 15 53.3
KepMag: 6.966
SkyGroup: 66
Season: 1
Channel: 58
Module: 17
Output: 2
Column: 901
Row: 432

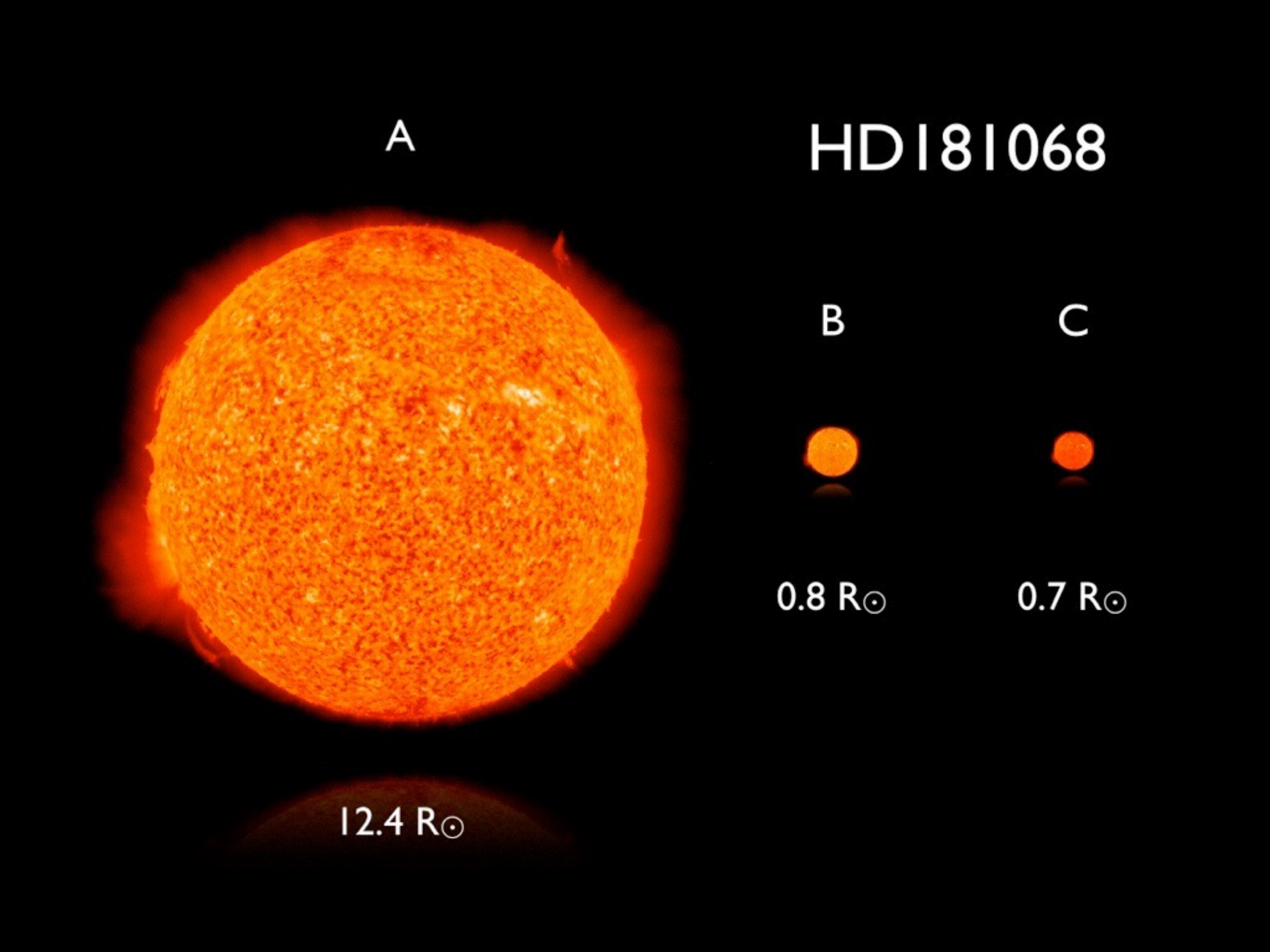
Trinity - triplán fedő hármascsillag



P(A-BC) ~ 45.52 nap



P(B-C) ~ 0.906 nap


HD181068
A
B
C
0.8 R⊙
0.7 R⊙
12.4 R⊙

Kepler-16: A Transiting Circumbinary Planet

Laurance R. Doyle,[1*] Joshua A. Carter,[2] Daniel C. Fabrycky,[3] Robert W. Slawson,[1] Steve B. Howell,[4] Joshua N. Winn,[5] Jerome A. Orosz,[6] Andrej Prˇsa,[7] William F. Welsh,[6] Samuel N. Quinn,[8] David Latham,[8] Guillermo Torres,[8] Lars A. Buchhave,[9,19] Geoffrey W. Marcy,[11] Jonathan J. Fortney,[12] Avi Shporer,[13,14] Eric B. Ford,[15] Jack J. Lissauer,[4] Darin Ragozzine,[2] Michael Rucker,[16] Natalie Batalha,[16] Jon M. Jenkins,[1] William J. Borucki,[4] David Koch,[4] Christopher K. Middour,[17] Jennifer R. Hall,[17] Sean McCauliff,[17] Michael N. Fanelli,[18] Elisa V. Quintana,[1] Matthew J. Holman,[8] Douglas A. Caldwell,[1] Martin Still,[18] Robert P. Stefanik,[8] Warren R. Brown,[8] Gilbert A. Esquerdo,[8] Sumin Tang,[8] Gabor Furesz,[8,10] John C. Geary,[8] Perry Berlind,[20] Michael L. Calkins,[20] Donald R. Short,[21] Jason H. Steffen,[22] Dimitar Sasselov,[8] Edward W. Dunham,[23] William D. Cochran,[24] Alan Boss,[25] Michael R. Haas,[4] Derek Buzasi,[26] Debra Fischer[27]

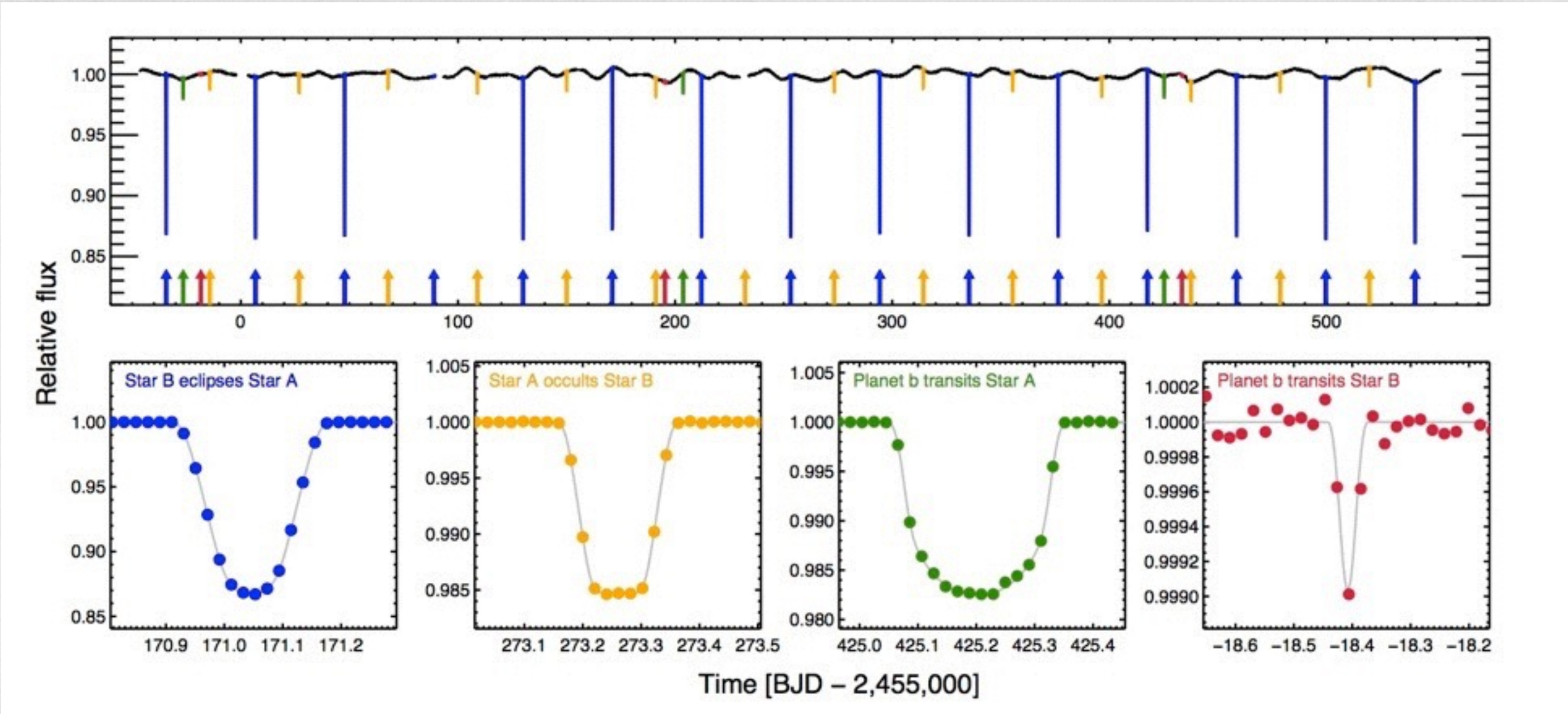
We report the detection of a planet whose orbit surrounds a pair of low-mass stars. Data from the Kepler spacecraft reveal transits of the planet across both stars, in addition to the mutual eclipses of the stars, giving precise constraints on the absolute dimensions of all three bodies. The planet is comparable to Saturn in mass and size and is on a nearly circular 229-day orbit around its two parent stars. The eclipsing stars are 20 and 69% as massive as the Sun and have an eccentric 41-day orbit. The motions of all three bodies are confined to within 0.5° of a single plane, suggesting that the planet formed within a circumbinary disk.

A planet with two suns is a familiar concept from science fiction. However, the evidence for the existence of circumbinary planets—those that orbit around both members of a stellar binary—has been limited. A few good cases have been made for circumbinary planets based on the timing of stellar eclipses [see, e.g., (*1*–*3*)], but in no previous case have astronomers obtained direct evidence of a circumbinary planet by observing a planetary transit (a miniature eclipse as the planet passes directly in front of a star). Detection of a transit greatly enhances confidence in the reality of the planet and provides unusually precise knowledge of its mass, radius, and orbital parameters (*4*).

Here we present the detection of a transiting circumbinary planet around a binary star system based on photometric data from the NASA Kepler spacecraft. Kepler is a 0.95-m space telescope that monitors the optical brightness of about 155,000 stars within a field encompassing 105 square degrees in the constellations Cygnus and Lyra (*5*–*8*).

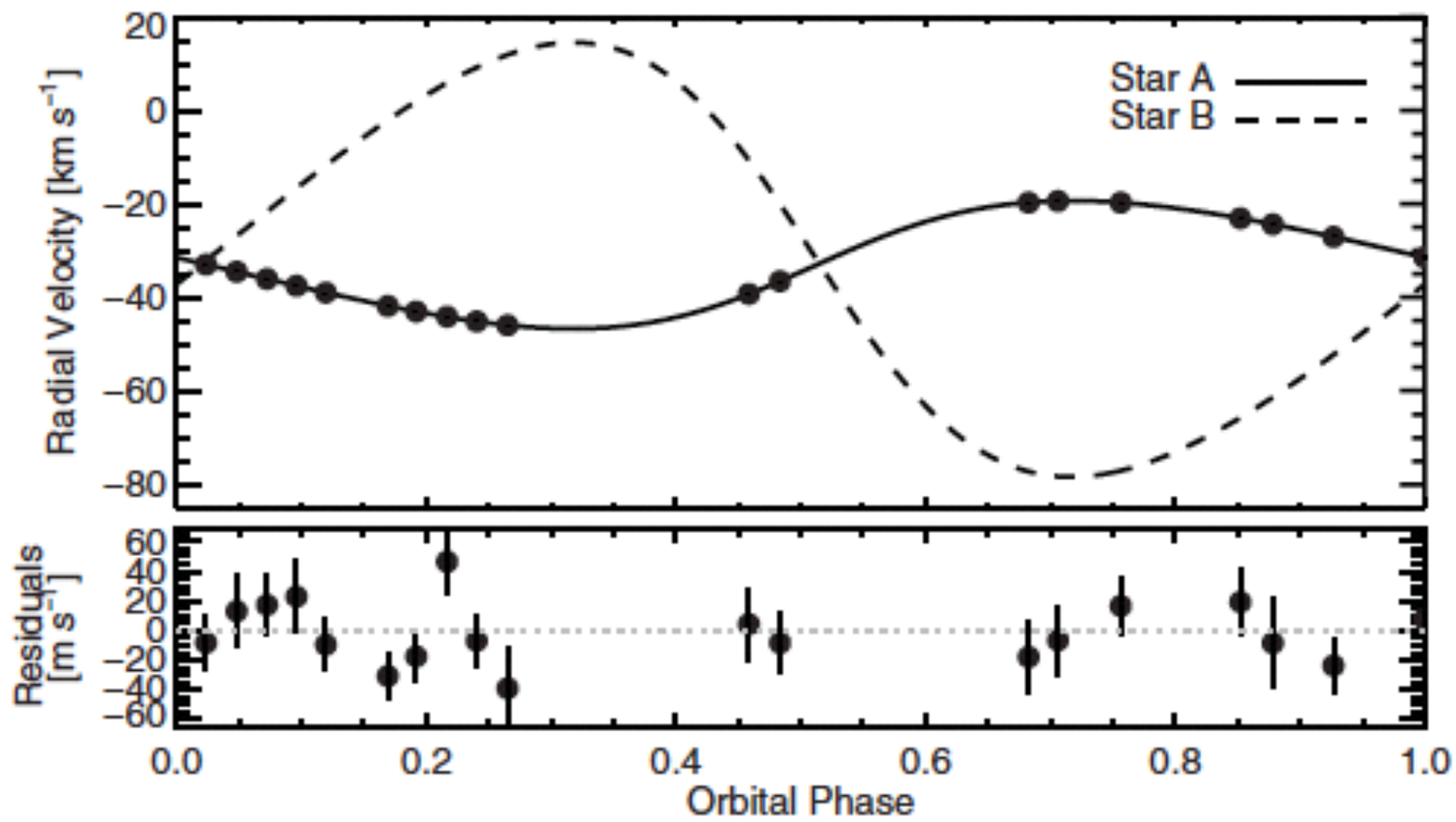
Star number 12644769 from the Kepler Input Catalog was identified as an eclipsing binary with a 41-day period, from the detection of its mutual eclipses (*9*). Eclipses occur because the orbital plane of the stars is oriented nearly edge-on as viewed from Earth. During primary eclipses, the larger star, denoted "A," is partially eclipsed by the smaller star "B," and the system flux declines by about 13%. During secondary eclipses, B is completely occulted by A, and the resulting drop in flux is only about 1.6% because B is rel-

Kepler-16(AB)b

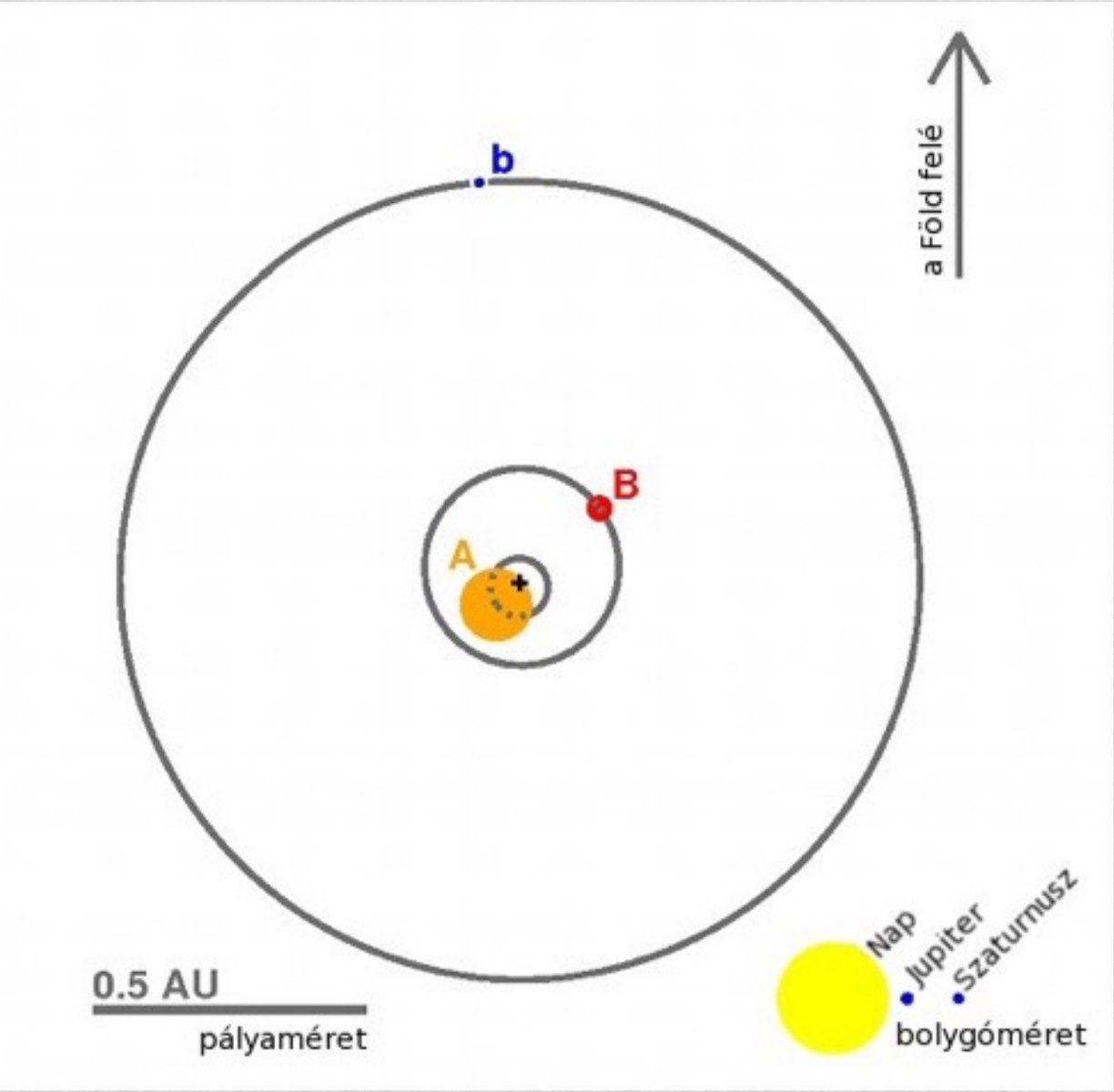


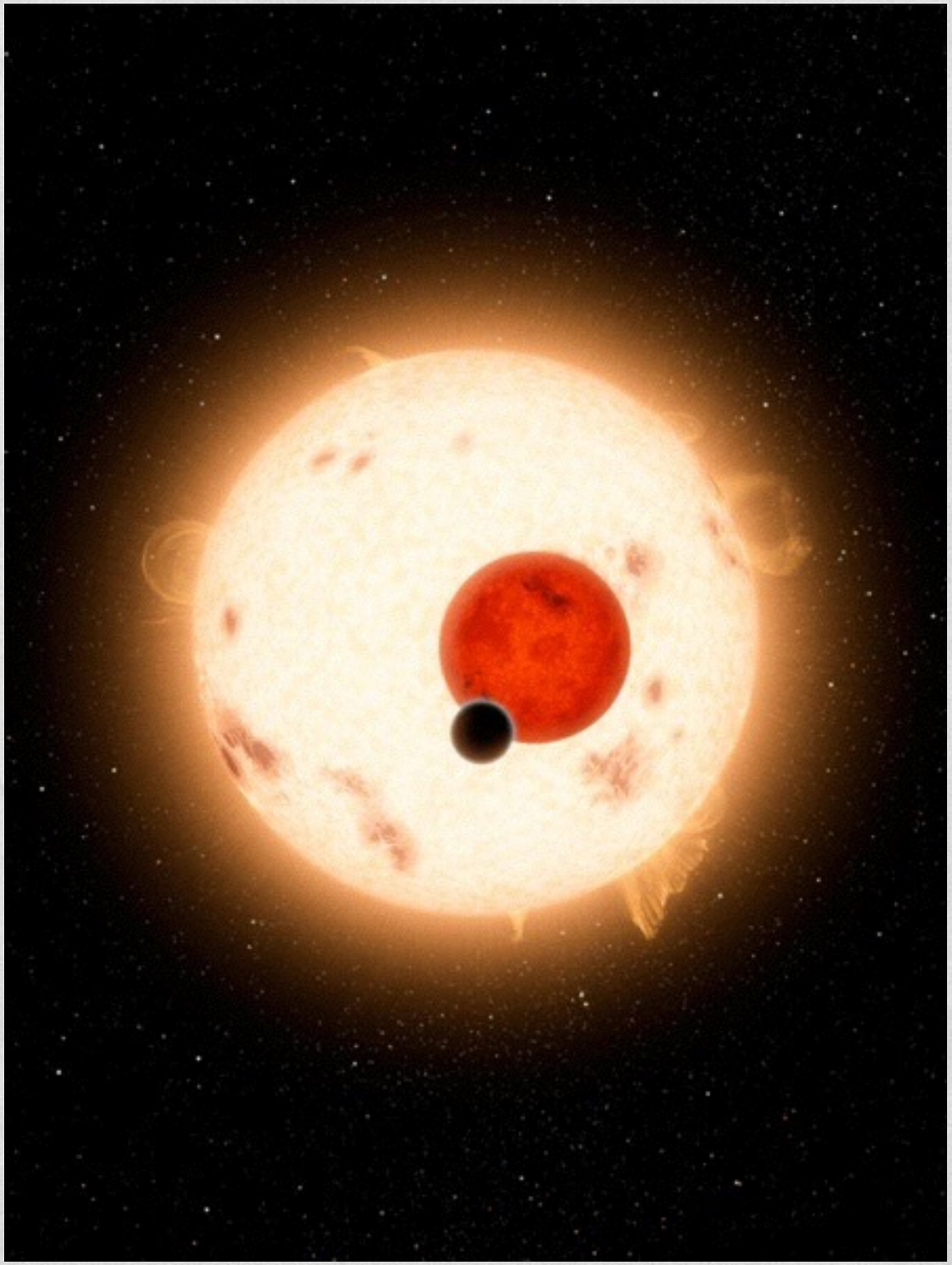
Doyle et al. (incl. Fűrész G.), Science, 2011. szept. 15.

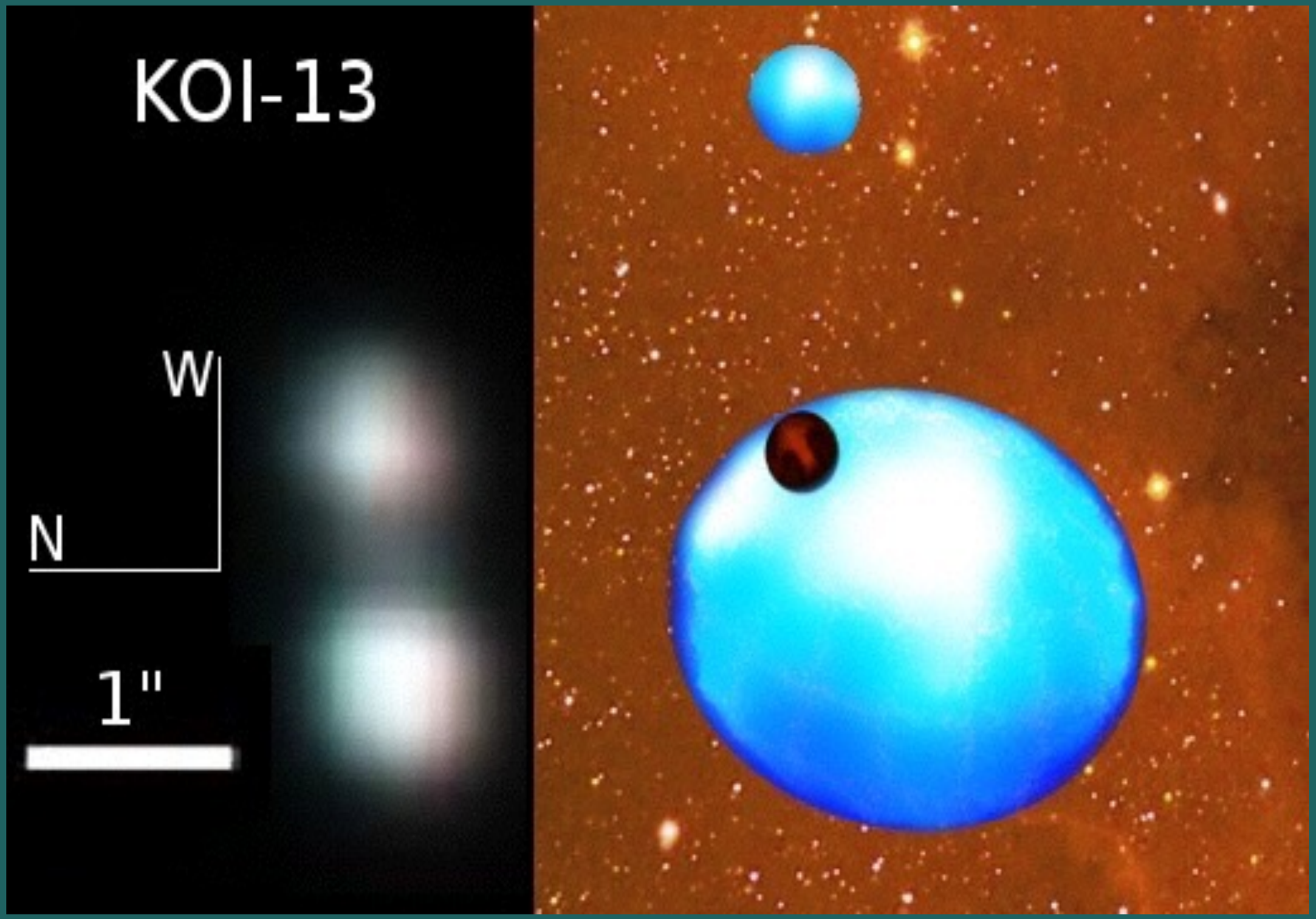
Fig. 2. Radial-velocity variations and perturbations of eclipse times. (**Top**) Observed radial-velocity variations of star A as a function of orbital phase, based on observations with the spectrograph of the Tillinghast 1.5-m telescope at the Fred Lawrence Whipple Observatory on Mount Hopkins, Arizona (SOM). Solid dots are the data, and the smooth curve is the best-fitting model. Although only the light



Tatooine bolygó...



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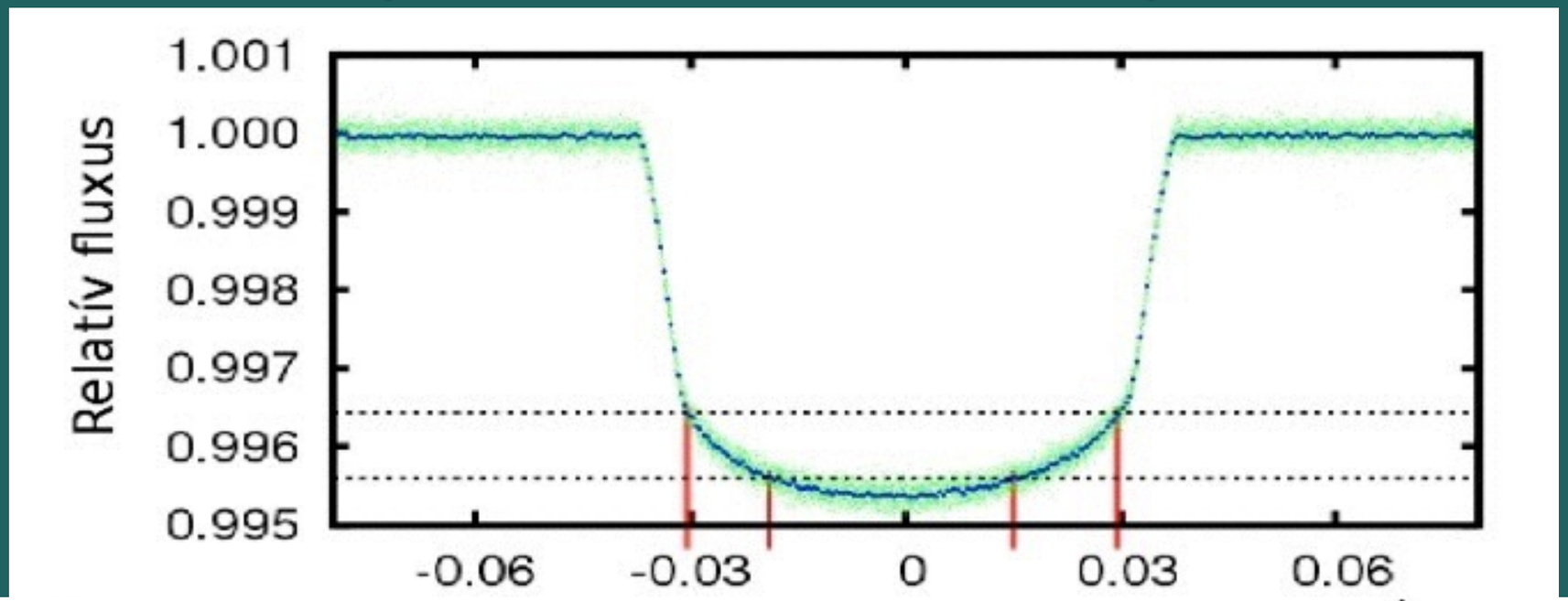
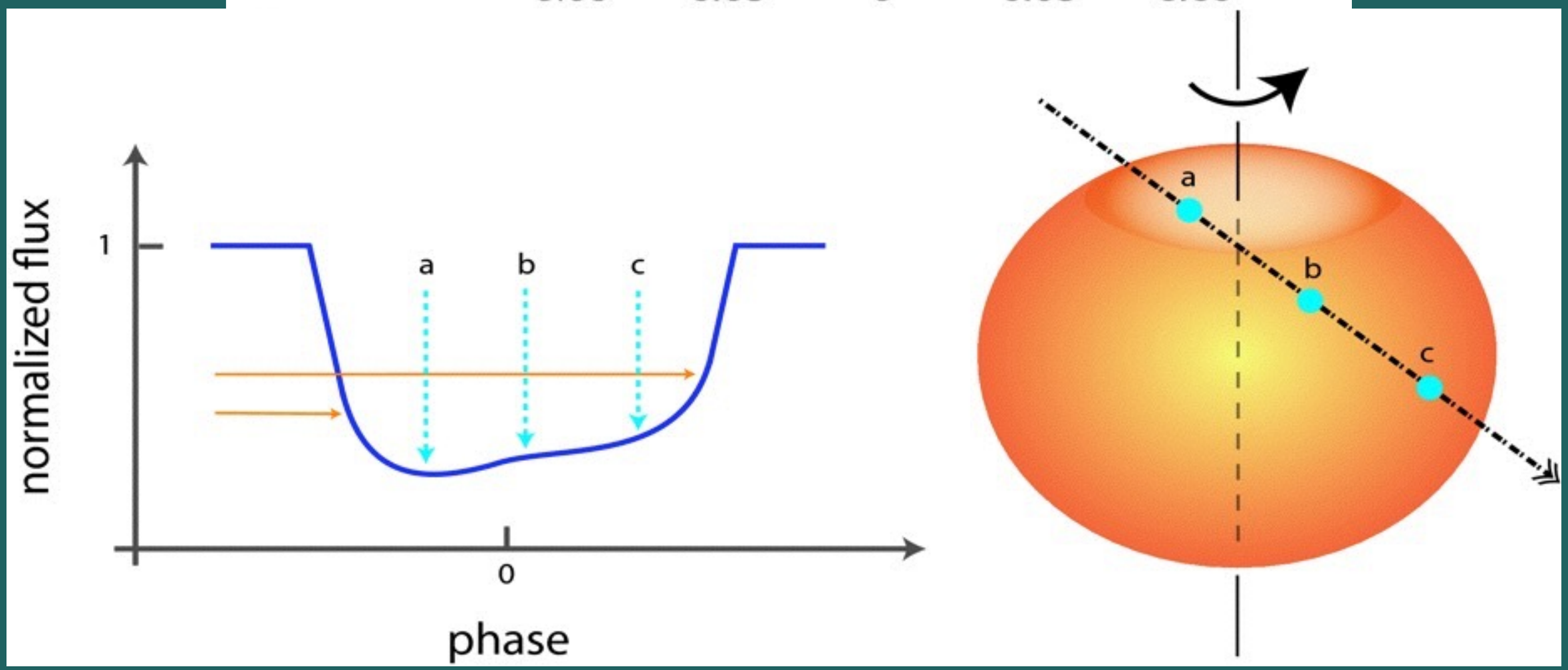
Pályadőltség detektálása RM-mérés nélkül (Szabó et al. 2011)





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Kielce
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Górnośląski Związek Metropolitalny
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Pécs
Szeged
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(Суботица)
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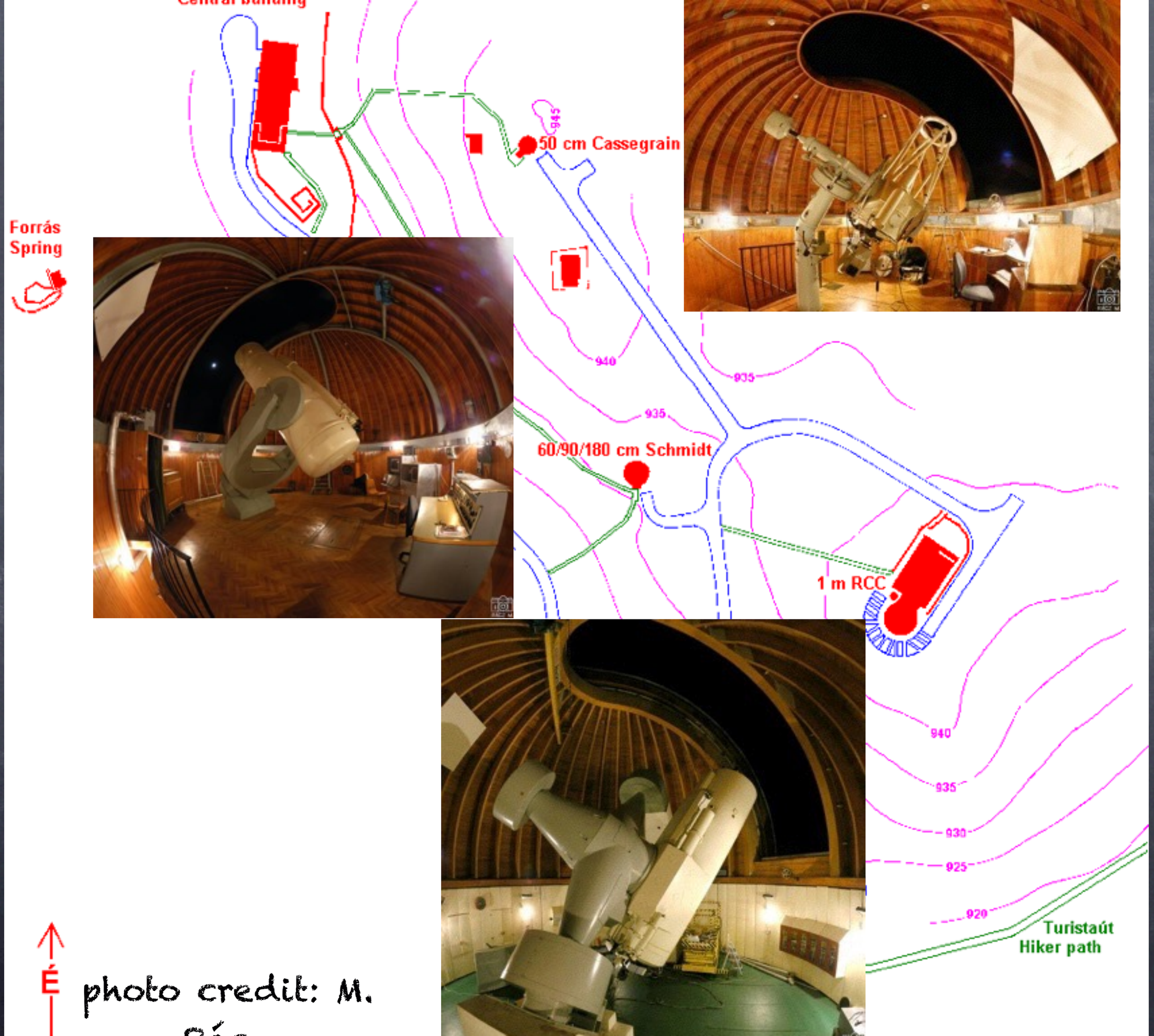

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Piszkéstetői fejlesztések

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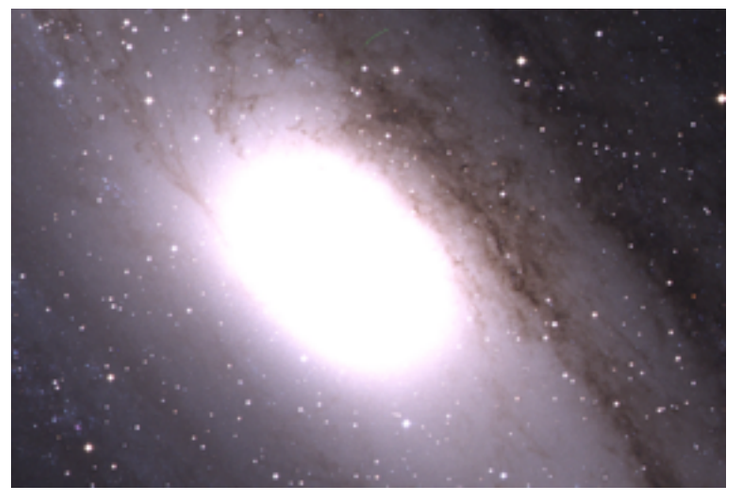
- Schmidt
- 40 cm-es távvezérlésű RC-teleszkóp, teljes épülettel
- RCC modernizáció



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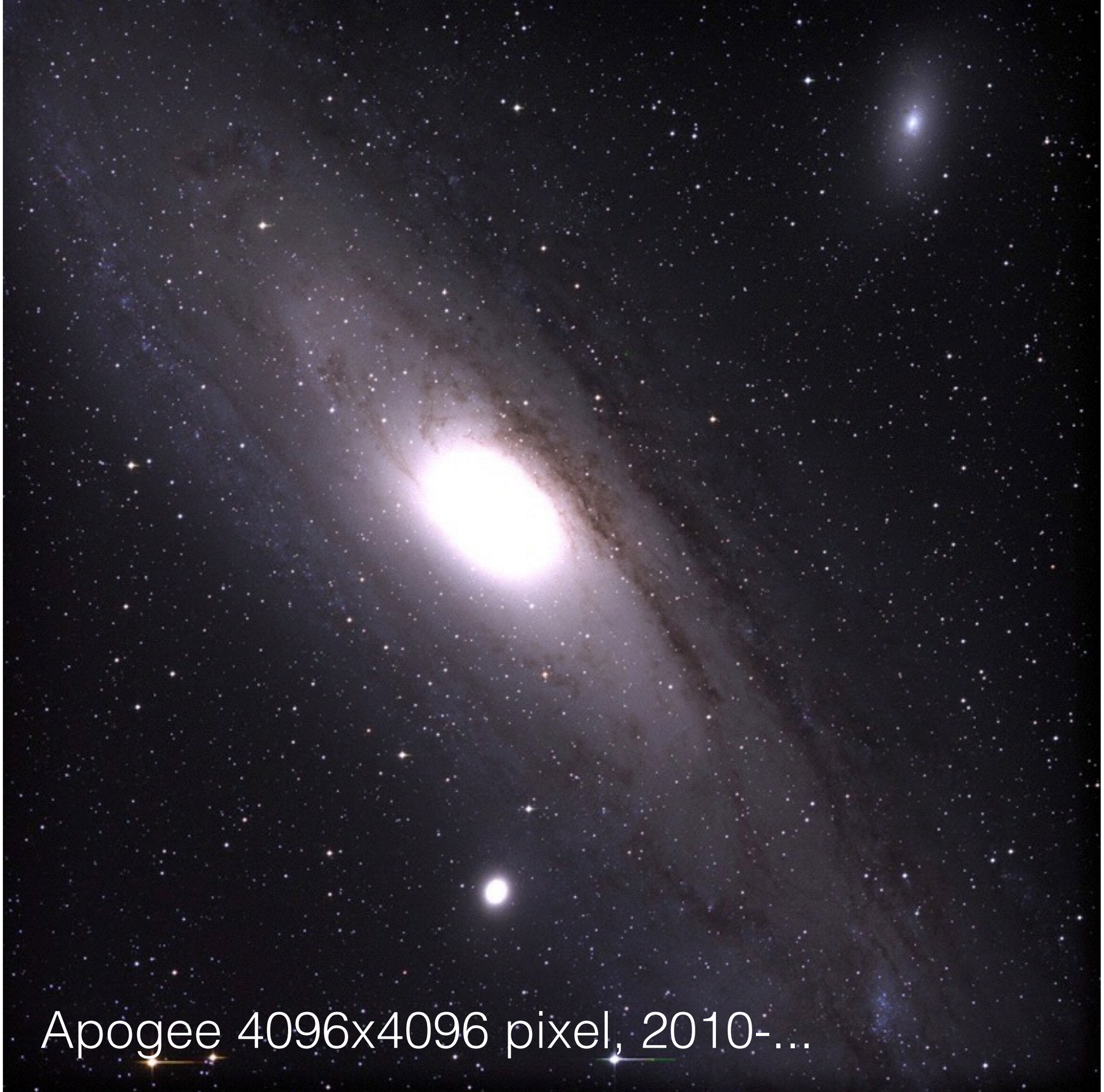
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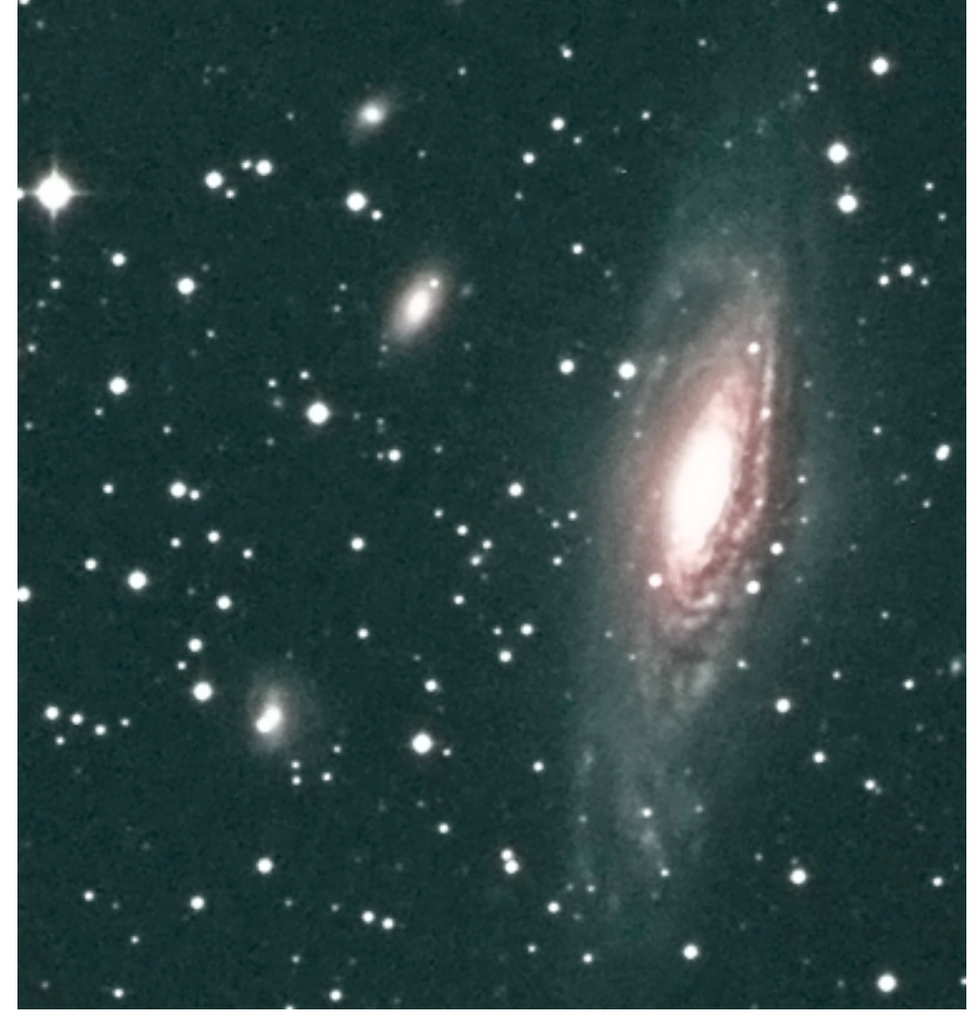
Határ a csillagos ég diákpályázat 2010



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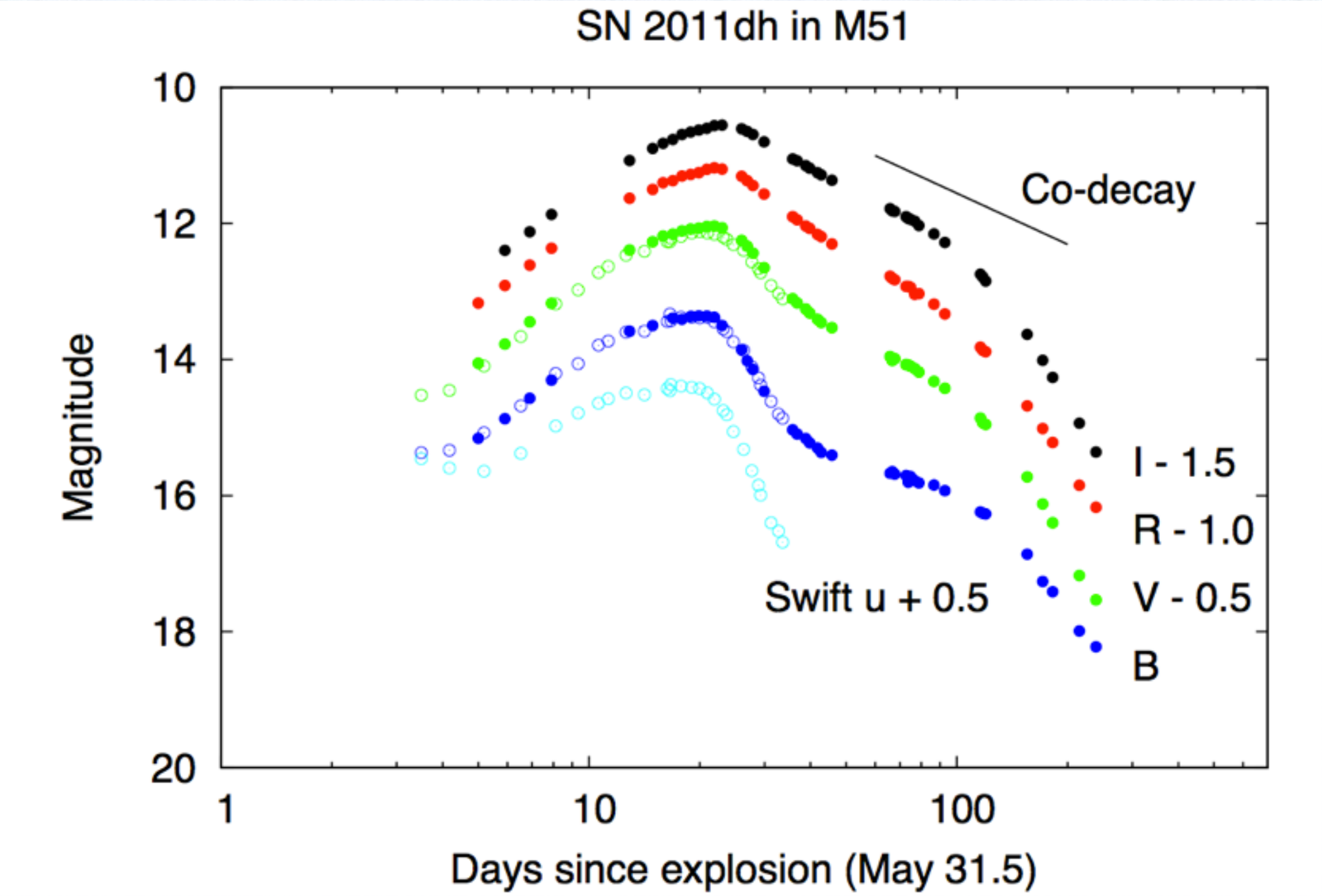
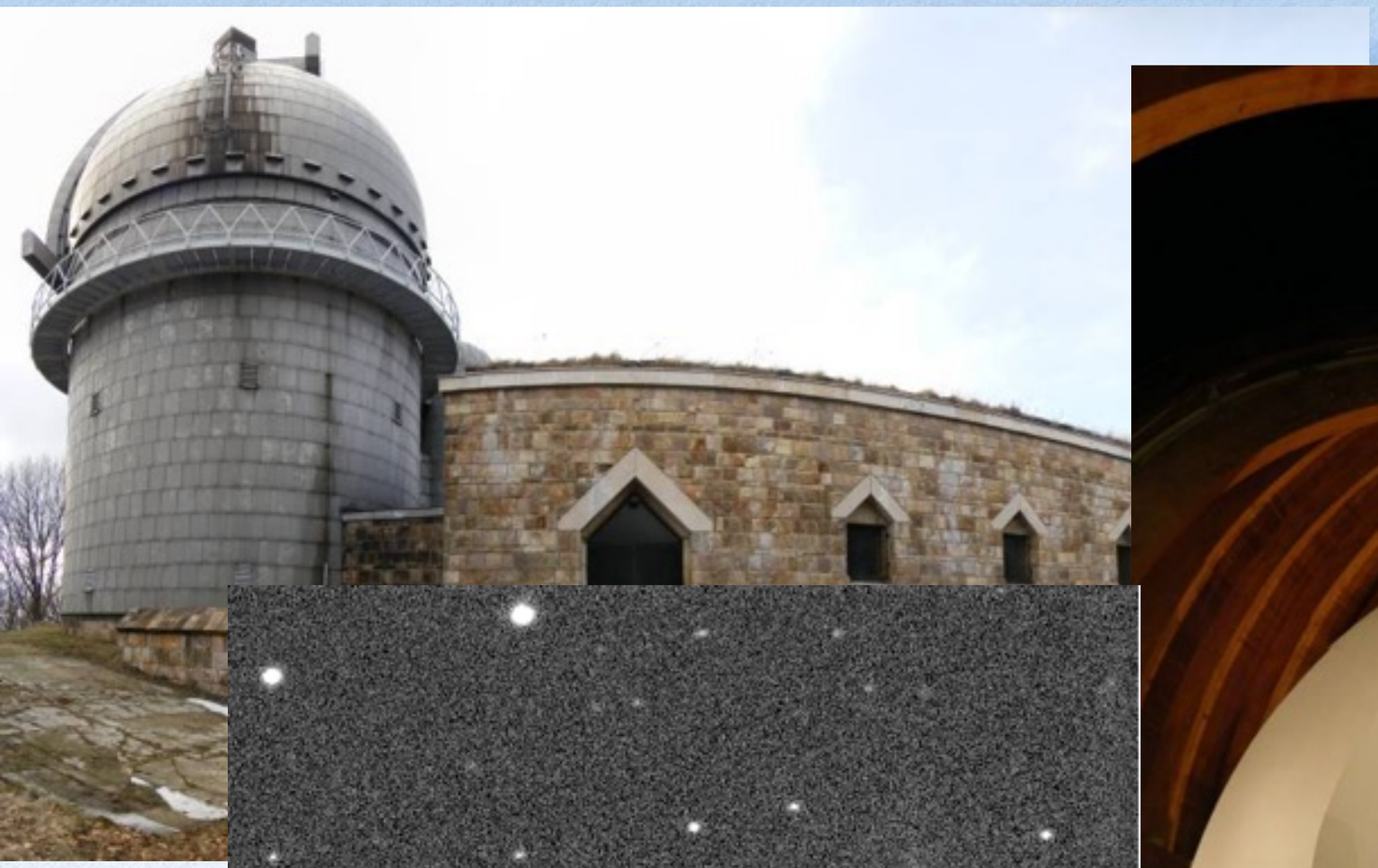
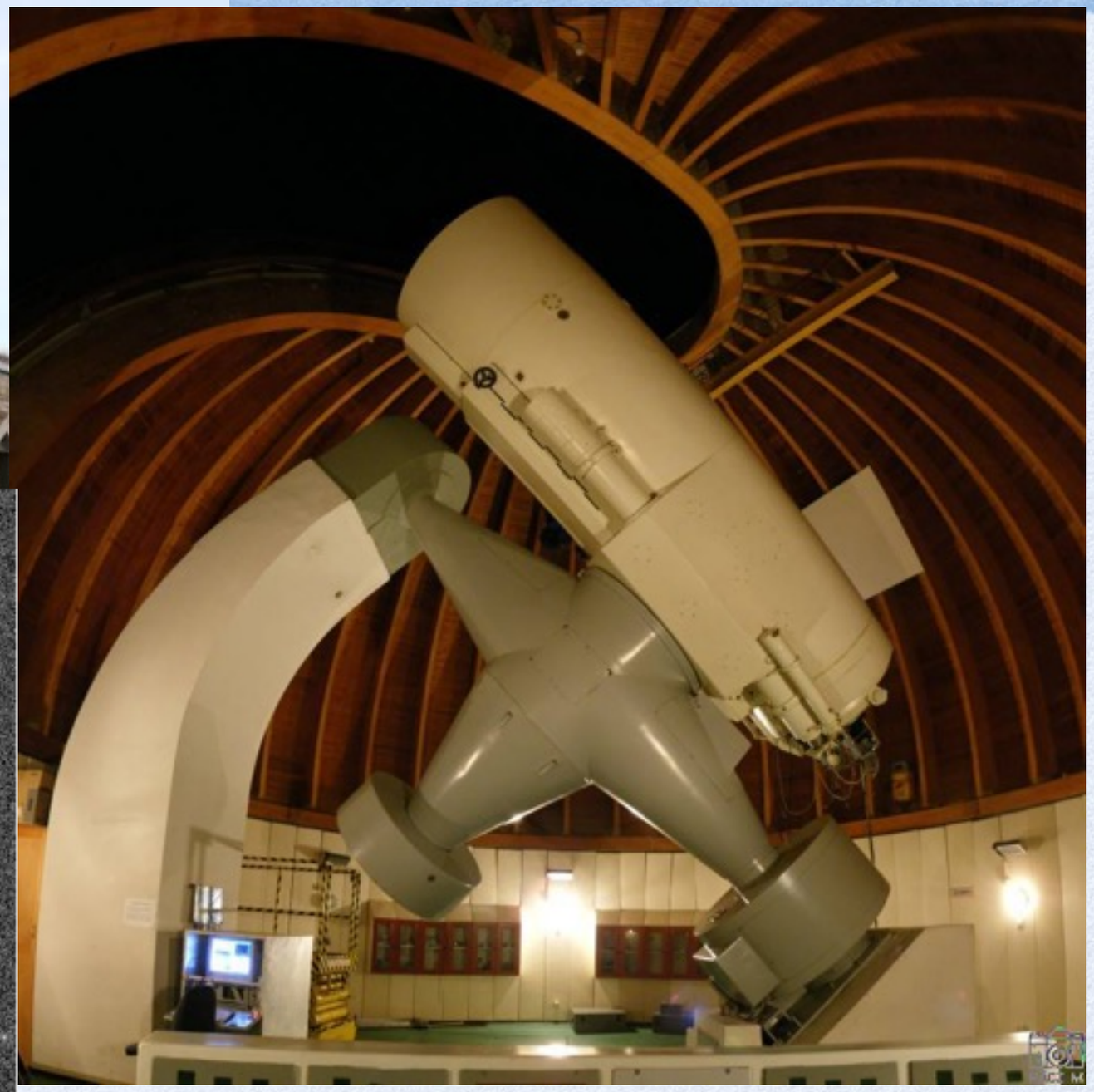


Vinkó et al.

AZ RCC FELÚJÍTÁSA





WASP-3, 3600 s exp. EMCCD-s autoguiding-gal

Spektroszkópia az RCC-N

- 2014. augusztustól: új spektrográf (200k USD)
- Legfényesebb csillagokra akár 10-20 m/s-os radiálissebesség-mérés
- Kémiai összetétel, forgási sebesség, kettősség, exobolygók detektálása…

ANGRY BIRDS
SEASONS

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SEASONS