A tudományos közlés művészete

II. Egy tudományos cikk 1.

Kiss László
MTA KTM Csillagászati Kutatóintézet

Miről lesz szó?

- Egy cikk témája
- Cikktípusok
- Cikk felépítése
- 2. számú gyakorlat

Nagyon jó összefoglalás: Sterken, C., 2006, Advice on Writing a Scientific Paper, in: “Astrophysics of Variable Stars”, ASP Conf. Series, Vol. 349, pp. 445-467

Cikk témája: mi a publikálható eredmény?

- Nincsenek egzakt és objektív jellemzők
- Reguláris csill. folyóiratok visszautasítási rátája alig 10-15% - kis rutinnal szinte bármilyen újdonság lepublikálható (de: Nature, Science: c.c. 95%-os visszautasítás)
- Tipikus témák

  elmélet: új elmélet; régi cáfolata; új módszer megalkotása, tesztelése; analitikus probléma numerikus megoldása; numerikus probléma analitikus tárgyalása

  megfigyelés: “új” égitest felfedezése, első leírása; új mérések felvétele, elemzése, fizikai tulajdonságok, jelenségek megértéséhez; égboltfelmérő programok eredményei (survey-ek)

- Csillagászat vs. asztrofizika

Tudományos publikációk típusai (csökkenő fontossági sorrend)

1. Kutatási eredményeket bemutató szakcikk referált folyóiratban (regular paper)

   Eredeti eredmények, máshol még nem publikálva, máshol nem is tervezett közléssel. Érdemes ellenőrizni a kiválasztott folyóirat publikációs szabályait.

2. “Letter to the Editor”: ApJ, MNRAS, A&A, PASJ

   Gyors közlést igénylő/megérdemlő új eredmények. Limitált oldalszám, esetleg karakterszám.

3. Áttekintő cikk (review paper)

   Nem csak irodalmi összefoglaló, hanem kritikai elemzés egy szakterület aktuális állapotáról.

4. Körlevelek, információs bulletinek:

   Rövid közlemények, praktikusan azonnali megjelenéssel. IBVS, IAUC, MPEC, CBET, ATel.

5. Adatcikk

   Nagy mennyiségű, jó minőségű, esetleg teljesen újszerű észlelési adatok diszkusszióval egybekötött leközlése. Elektronikus appendixek egyre gyakrabban. ApJS, MNRAS, A&A (régen A&AS).

6. Műszer és szoftver manuálok

7. Konferenciák meghívott (áttekintő előadásai).

8. Konferenciacikkek (contributed papers)

9. “Repülőjegy-cikkek”: speciális konferenciacikkek, pusztán adminisztrációs szempontok.

10. Szakmai népszerűsítő cikkek: új eredmények, általában nagyobb csoporttól néhány érdekesebb és friss újdonság. Obszervatóriumok kiadványaiban (newsletterek)

11. “Szalámicikkek”: egy nagyobb munka elaprózva, több rövidebb cikkre felhigítva.

12. Esszé: értelmező cikk a szerző személyes szempontjai tükrében.

13. “Hoax cikkek”: jóindulatú, rosszindulatú (hamisítás)

14. Ismeretterjesztő cikkek, szakírói munka

15. Egyéb (pl. bibliográfiai cikkek a csillagászati szakfolyóiratokban)

Példák.

1. Szakcikk referált folyóiratban

Astron. Astrophys. 308, 791–798 (1996)

ASTRONOMY AND ASTROPHYSICS

Application of wavelet analysis in variable star research

II. The semiregular star V Bootis

K. Szatmáry, J. Gál, and L.L. Kiss

Astron. Obs. and Dept. of Exp. Physics, JATE University, Dóm tér 9, H-6720, Szeged, Hungary

Received 13 July 1995 / Accepted 2 September 1995

Abstract. Light curve analysis of the SRa-type variable V Boo is presented and discussed. The periods are determined and the stability of these periods as well as their amplitudes are investigated with wavelet analysis. The amplitude decrease is studied with the so called ridge procedure, which shows that the amplitude of the longer period strongly decreased while the amplitude of the shorter period seems to remain stable. The possible interpretations of this effect are discussed. Using theoretical models and observational relations physical parameters and pulsational modes of V Boo are also estimated.

Key words: methods: data analysis – stars: AGB, post-AGB – stars: individual: V Boo

hand the properties of light variation of individual variables are poorly known. Especially the long-term variations in amplitude and/or period are interesting because such phenomenon may be connected with the evolution of these stars (e.g. Gál & Szatmáry 1995).

In this paper, which is the second of the series of papers dealing with astronomical applications of wavelet analysis we present the light curve analysis of the SRa type variable V Boo. The aim of this paper is to study the efficiency of the wavelet method in variable star research and on the other hand to investigate the long-term variations of V Boo.

V Boo = HD 127335 = SAO 64180 = HIC 70885 = IRAS 14277+3904 (V=7.9 mag) is an SRa star with spectral type M6e (similar to Mira stars).

Mon. Not. R. Astron. Soc. **297,** 825–838 (1998)

A photometric and spectroscopic study of the brightest northern Cepheids – I. Observations

László L. Kiss★

Department of Experimental Physics, JATE University, Szeged, Dóm tér 9, H-6720 Hungary

Accepted 1998 February 12. Received 1998 February 6; in original form 1997 August 27

ABSTRACT

We present simultaneous *UBV* and *uvby* photometry for the 18 brightest northern Cepheids carried out between 1995 and 1997. Additionally, two fainter stars have been observed in the Johnson system only. The whole photometric data base contains about 3500 individual data points for 20 stars. The accuracy has been carefully tested with different methods. A serious systematic difference has been found between the present data set and the Strömgren photometry available in the literature, which has probably been caused by the peculiar filter set used in the earlier study.

As an extension to the photometry, we took high-resolution optical spectra at David Dunlap Observatory in the red spectral region ($\lambda/\Delta\lambda \approx$ 40 000, in the interval of 6200 and 6600 Å including Hα). The spectroscopic programme contained 12 stars from the photometric programme, the newly discovered bright classical Cepheid CK Cam and two double-mode Cepheids (TU Cas and CO Aur). New radial velocities obtained with the cross-correlation technique are presented. We found significant velocity differences between two cross-correlated spectral regions (6188–6220 and 6405–6435 Å) as large as 0.8–1.2 km s^{-1}, which show very characteristic phase dependence in certain Cepheids.

Finally, recent period variations are briefly discussed in terms of phase jumps and duplicity.

Key words: pulsars: general – Cepheids.

2. Letter

Astron. Astrophys. 355, L9–L12 (2000)

ASTRONOMY AND ASTROPHYSICS

LETTER

Letter to the Editor

Early spectroscopic observations of Nova (V1494) Aquilae 1999 No.2⋆

L.L. Kiss[1] **and J.R. Thomson**[2]

[1] University of Szeged, Department of Experimental Physics and Astronomical Observatory, Szeged, Dóm tér 9., 6720 Hungary
[2] University of Toronto, David Dunlap Observatory, Richmond Hill, Canada

Received 21 December 1999 / Accepted 28 January 2000

Abstract. Low- and medium resolution spectra of the fast nova, Nova (V1494) Aql 1999 No.2 obtained approximately 6, 7, 19 and 28 days after the maximum brightness are presented and discussed. The spectrum covering the whole optical range at day 6 shows the principal plus diffuse-enhanced spectrum. The presence of strong Fe II multiplets with P-Cyg profiles suggest that V1494 Aql belongs to the "Fe II" class defined by Williams (1992). The medium-resolution profiles ($\lambda/\Delta\lambda \approx 7000$) of the H$\gamma$ and Hδ lines shows well-defined sharp absorption features with the same radial velocities, while the Hα split into two distinct emission peaks in the last two spectra (Δt=19 and 28 days). The observed behaviour suggests an expanding equatorial ring with possible small-scale clumpiness in the nova shell. The visual lightcurve is used to deduce M_V by the maximum magnitude versus rate of decline relationship. The resulting parameters are: $t_2 = 6.6 \pm 0.5$ days, t_3=16±0.5 days, $M_V = -8.8 \pm 0.2$ mag. Adopting this value, a distance d=3.6±0.3 kpc is determined.

Key words: stars: novae, cataclysmic variables – stars: individual: V1494 Aql

1. Introduction

Nova Aql 1999 No. 2 (=V1494 Aql) was discovered visually by A. Pereira on Dec. 1.875 UT, 1999 (Pereira et al. 1999) at magnitude m_{vis}=6.0. The spectroscopic confirmation was given by subsequent low-resolution observations revealing hydrogen Balmer series with P-Cyg profiles, Mg II 448.1 nm (or He I 447.1 nm) and O I 777.4 nm lines, all with P-Cyg profiles. The II multiplets at 492, 502 and 517 nm were observed in emission with P-Cyg profile. Further low-resolution spectroscopy was reported by W. Liller (Liller et al. 1999), who took a CCD spectrogram with an objective prism, that showed Hα in emission at a level of 31 percent above the local continuum.

Early photometric observations consist of mainly visual estimates carried out by amateur astronomers published partly in a number of IAU Circulars and partly in observing reports collected by the VSNET group (`http://www.kusastro.kyoto-u.ac.jp/vsnet`). Thanks to the fast access to the newly obtained magnitudes, the realtime brightness evolution could be followed. The star reached a maximum brightness of 4.0v shortly after the discovery, which was followed by a rapid decline (see below). Few photoelectric data were published which gave a similar picture to that based on visual estimates. V1494 Aql was also detected at 0.85 and 0.45 mm using SCUBA on the JCMT (Pontefract et al. 1999)

V1494 Aql is the brightest nova in the northern hemisphere after Nova (V1500) Cygni 1975 – Nova (V1974) Cygni 1992 was fainter in maximum by about 0.2 mag, Warner 1995 –, therefore, it provides a good opportunity to carry out thorough studies of a nova explosion by various instruments. Unfortunately, its celestial position disables continuous follow-up observations in early 2000. Therefore, the spectroscopic evolution, especially the formation of the nebular spectrum is difficult to monitor. The main aim of this paper is to present spectra of the nova taken about a week, 19 and 28 days after maximum and to discuss the meaning of the observed spectra. In addition, we also estimate the absolute magnitude and the distance of the nova given by the characteristic light curve parameters (t_2 and t_3).

3. Review (n.b.: Ann. Rev. Astron. Astrophys.)

CSIRO PUBLISHING

Review

www.publish.csiro.au/journals/pasa *Publications of the Astronomical Society of Australia*, 2003, **20**, 203–212

Solar-like Oscillations

Timothy R. Bedding[1] and Hans Kjeldsen[2,3]

[1] School of Physics A28, University of Sydney, NSW 2006, Australia
bedding@physics.usyd.edu.au
[2] Teoretisk Astrofysik Center, Danmarks Grundforskningsfond, 8000 Aarhus C, Denmark
hans@phys.au.dk
[3] Institut for Fysik og Astronomi, 8000 Aarhus C, Denmark

Received 2003 May 12, accepted 2003 May 19

Abstract: The five-minute oscillations in the Sun have provided a wealth of information about the solar interior. After many attempts, positive detections of similar oscillations in solar-type stars have now been made. This review discusses the properties of solar-like oscillations, the methods used to observe them, and the results on individual stars. We conclude that the study of solar-like oscillations from the ground and space has an exciting future.

Keyword: stars: oscillations

1 Introduction

Measuring stellar oscillations is a beautiful physics experi-

theoretical models of solar evolution and led to fascinating new insights into the complex dynamics of solar internal rotation. Observations that do not resolve the solar disk

4. Bulletin

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 4237

Konkoly Observatory
Budapest
30 August 1995

HU ISSN 0374 – 0676

BV PHOTOMETRY OF THE DELTA SCUTI STAR IOTA BOOTIS

The light variation of Iota Bootis (= 21 Boo = NSV 06610 = HR 5350) was discovered by Albert (1980). Based on his data he concluded that Iota Bootis may be a Delta Scuti-type variable with a very short period (about 40 minutes). Szatmáry (1988) had similar result, which was confirmed by Gál et al. (1994). Unfortunately these measurements had very limited accuracy therefore only the existence of the variation with a period close to 40 min. was demonstrated.

We carried out photoelectric photometry (through B and V filters) on two nights, 24 and 26 May, 1995 with the 40 cm Cassegrain type telescope of Szeged Observatory using an SSP-5A photometer. The comparison star was HR 5360. The main aim of our measurements was to determine the exact period of variation and its amplitude in B and V. On these two nights we collected 155 points in two colors which cover about 10 cycles of the light curve (the individual observations are available through e-mail – see below).

In order to determine the exact period of variation we calculated the Fourier-transform (DFT) of B and V light curves separately and the phase dispersion spectra (PDM) too. The results in the different colors and with different methods are in agreement with each other (the variance is about 0.0002-0.0003 day). The correct value of the period is 0.0276 day (39.7 min) with an estimated error of ± 0.0003 day (0.4 min).

5. Adatcikk

Mon. Not. R. Astron. Soc. **400,** 1945–1961 (2009) doi:10.1111/j.1365-2966.2009.15588.x

Long-term photometry and periods for 261 nearby pulsating M giants

V. Tabur,[1⋆] T. R. Bedding,[1] L. L. Kiss,[1,2] T. T. Moon,[1] B. Szeidl[2] and H. Kjeldsen[3]

[1]*Sydney Institute for Astronomy, School of Physics, A28, The University of Sydney, NSW 2006, Australia*
[2]*Konkoly Observatory, Hungarian Academy of Sciences, PO Box 67, H-1525 Budapest, Hungary*
[3]*Danish AsteroSeismology Centre (DASC), Department of Physics and Astronomy, University of Aarhus, DK-8000 Aarhus C, Denmark*

Accepted 2009 August 20. Received 2009 August 9; in original form 2009 May 24

ABSTRACT

We present the results of a 5.5-yr CCD photometric campaign that monitored 261 bright, southern, semiregular variables (SRVs) with relatively precise *Hipparcos* parallaxes. The data are supplemented with independent photoelectric observations of 34 of the brightest stars, including 11 that were not part of the CCD survey, and a previously unpublished long time-series of VZ Cam. Pulsation periods and amplitudes are established for 247 of these stars, the majority of which have not been determined before. All M giants with sufficient observations for period determination are found to be variable, with 87 per cent of the sample (at a signal-to-noise ratio of $\geq$7.5) exhibiting multiperiodic behaviour. The period ratios of local SRVs are in excellent agreement with those in the Large Magellanic Cloud. Apparent *K*-band magnitudes are extracted from multiple near-infrared catalogues and analysed to determine the most reliable values. We review the effects of interstellar and circumstellar extinction and calculate absolute *K*-band magnitudes using revised *Hipparcos* parallaxes.

Key words: stars: AGB and post-AGB – stars: fundamental parameters – stars: late-type – stars: mass-loss – stars: variables: other – solar neighbourhood.

6. Manuálok

Comm. in Asteroseismology
Vol. 146, 2005

Period04 User Guide

P. Lenz, M. Breger

Department of Astronomy, Univ. Vienna, Türkenschanzstrasse 17,
1180 Vienna, Austria

Abstract

Period04, an extended version of Period98 by Sperl (1998), is a software package designed for sophisticated time string analysis. In this article we present the User Guide for Period04.

7. Meghívott áttekintő konferenciacikk

Mem. S.A.It. Vol. 77, 303

Memorie della

Red giant variables: OGLE–II and MACHO

L.L. Kiss[1] and P. Lah[2]

[1] School of Physics A28, University of Sydney, NSW 2006, Australia, e-mail: laszlo@physics.usyd.edu.au
[2] Research School of Astronomy & Astrophysics, Australian National University, Canberra, Australia

Abstract. We review the recent impact of microlensing projects on our understanding of pulsating red giant stars. Discussed are red giant stars' pulsation properties (period–luminosity relations, period changes, mode switchings), Red Giant Branch pulsations, metallicity effects and the use of red giant variables to explore galactic structure.

Key words. Stars: AGB and post-AGB – Stars: late-type – Stars: oscillations – Stars: variables

8. Konferenciacikk (contributed paper)

A Half-Century of Stellar Pulsation Interpretations
ASP Conference Series, Vol. 135, 1998
P. A. Bradley and J. A. Guzik, eds.

Photoelectric and Spectroscopic Study of the Brightest Northern Cepheids

L.L. Kiss

Department of Experimental Physics, JATE University, Szeged, Dóm tér 9, H-6720 Hungary

Abstract. We present an observational analysis of the brightest 18 northern Cepheids based on simultaneous *UBV* and *uvby* photometry and high resolution optical spectroscopy carried out at Szeged Observatory and David Dunlap Observatory. We have found systematic differences between our data and the previously published Strömgren photometry of Feltz & McNamara (1980) were probably caused by the peculiar filter set used in the early study. We have determined Cepheid reddenings by a completely empirical method. A new effective temperature scale has been derived using recently calculated grids of synthetic colours.

The spectroscopic study has focused on the problem of radial velocity determinations and the observable differences in radial velocities obtained from different lines with different excitation potentials. Line profile variations are briefly discussed considering the effects of velocity gradients.

9. “Repülőjegy-cikk”

Binary Stars as Critical Tools & Tests
in Contemporary Astrophysics
Proceedings IAU Symposium No. 240, 2006
W.I. Hartkopf, E.F. Guinan & P. Harmanec, eds.

doi:10.1017/S1743921307004310

Eclipsing Binaries in the LMC: a Wealth of Data for Astrophysical Tests

A. Derekas, L. L. Kiss and T. R. Bedding

School of Physics, University of Sydney, NSW 2006, Australia
email: derekas@physics.usyd.edu.au

Abstract.

We have analysed publicly available MACHO observations of 6833 variable stars in the Large Magellanic Cloud, classified as eclipsing binaries. After finding that a significant fraction of the sample was misclassified, we redetermined periods and variability class for all stars, producing a clean sample of 3031 eclipsing binaries. We have investigated their distribution in the period-color-luminosity space, which was used, for example, to assign a foreground probability to every object and establish new period-luminosity relations to selected types of eclipsing stars. We found that the orbital period distribution of LMC binaries is very similar to those of the SMC and the Milky Way. We have also determined the rate of period change for every star using the $O-C$ method, discovering about 40 eclipsing binaries with apsidal motion, 45 systems with cyclic period changes and about 80 stars with parabolic $O-C$ diagrams. In a few objects we discovered gradual amplitude variation, which can be explained by changes in the orbital inclination caused by a perturbing third body in the system.

Keywords. binaries: eclipsing, galaxies: individual (Large Magellanic Cloud)

10. Szakmai népszerűsítő cikk

STAR CLUSTER KINEMATICS WITH AAOMEGA

László L. Kiss (Univ. of Sydney), Zoltán Balog (Univ. of Arizona), Gyula M. Szabó (Univ. of Szeged, Hungary), Quentin A. Parker (Macquarie Uni. & AAO), David J. Frew (Perth Observatory)

Introduction

The high-resolution setup of the AAOmega spectrograph makes the instrument a unique stellar radial velocity machine, with which measuring Doppler shifts to ±1.3 km s^{-1} for 16 magnitude stars within an hour of net integration has become a reality. The 1700D grating with its spectral resolution of $\lambda/\Delta\lambda$=10000 in the near-infrared calcium triplet (CaT) range between 8400–8800 Å is particularly well suited for late-type stars, whose spectral energy distribution peaks exactly in this range and whose spectra are dominated by the strong CaT lines. The large field of view and the instrument's capabilities form an excellent combination for kinematic studies of star clusters.

The two types of stellar aggregates, open and globular clusters, are good representations of the two ends of stellar evolution and, as hosts to thousands of stars of the same age and chemical composition, they have changed in the last few years, when a number of new instruments came online (Hectospec/Hectoechelle at MMT, FLAMES at VLT, DEIMOS at Keck, AAOmega at AAT, etc.), delivering thousands of spectra at a speed and sensitivity never seen before.

Radial velocities tell a different story to the colour-magnitude diagram: velocity dispersion is linked to the total mass of the cluster, hence indicating the presence or absence of invisible matter; the dispersion as a function of radius is a tell-tale indicator of the underlying mass profile, whereas systemic rotation can be revealed through an analysis of angular distribution of the velocities. Coupled with proper motion measurements, velocities can also be used to derive a kinematic distance (assuming energy equipartition for the member stars). A completely new avenue opens up with the full spectral analysis, when atmospheric parameters such as effective temperature, surface gravity and metallicity, are determined for each star. In that case, evolutionary models can be fitted directly to the physical parameters rather than the colours and magnitudes, which are sensitive to the interstellar reddening.

In semester 2008A, Balog et al. were granted four nights of AAOmega time to observe the relatively young double open cluster NGC 2451A and B. These have been studied with the Spitzer space telescope to identify stars

11. "Szalámicikkek"

Mon. Not. R. Astron. Soc. **400,** 917–923 (2009) doi:10.1111/j.1365-2966.2009.15505.x

Testing Newtonian gravity with AAOmega: mass-to-light profiles of four globular clusters

Richard R. Lane,[1★] László L. Kiss,[1] Geraint F. Lewis,[1] Rodrigo A. Ibata,[2] Arnaud Siebert,[2] Timothy R. Bedding[1] and Péter Székely[3]

[1]*Sydney Institute for Astronomy, School of Physics, A28, The University of Sydney, NSW 2006, Australia*
[2]*Observatoire Astronomique, Universite de Strasbourg, CNRS, 67000 Strasbourg, France*
[3]*Department of Experimental Physics, University of Szeged, Szeged 6720, Hungary*

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Mon. Not. R. Astron. Soc. **401,** 2521–2530 (2010) doi:10.1111/j.1365-2966.2009.15827.x

Testing Newtonian gravity with AAOmega: mass-to-light profiles and metallicity calibrations from 47 Tuc and M55

Richard R. Lane,[1★] László L. Kiss,[1,2] Geraint F. Lewis,[1] Rodrigo A. Ibata,[3] Arnaud Siebert,[3] Timothy R. Bedding[1] and Péter Székely[4]

[1]*Sydney Institute for Astronomy, School of Physics, A29, University of Sydney, NSW, Australia 2006*
[2]*Konkoly Observatory of the Hungarian Academy of Sciences, PO Box 67, H-1525 Budapest, Hungary*
[3]*Observatoire Astronomique, Universite de Strasbourg, CNRS, 67000 Strasbourg, France*
[4]*Department of Experimental Physics, University of Szeged, Szeged 6720, Hungary*

Accepted 2009 October 4. Received 2009 October 2; in original form 2009 September 1

12. Esszé

FULL TITLE
*ASP Conference Series, Vol. **VOLUME**, **YEAR OF PUBLICATION***
NAMES OF EDITORS

Sociology of Modern Cosmology

Martín López-Corredoira[1]

[1] *Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain*

Abstract. Certain results of observational cosmology cast critical doubt on the foundations of standard cosmology but leave most cosmologists untroubled. Alternative cosmological models that differ from the Big Bang have been published and defended by heterodox scientists; however, most cosmologists do not heed these. This may be because standard theory is correct and all other ideas and criticisms are incorrect, but it is also to a great extent due to sociological phenomena such as the "snowball effect" or "groupthink". We might wonder whether cosmology, the study of the Universe as a whole, is a science like other branches of physics or just a dominant ideology.

arXiv:0812.0537

What do astrophysics and the world's oldest profession have in common?[1]

Martín López-Corredoira

Dedicated to Eduardo Simonneau,

eye-opener master

Life is the best teacher, much better than university. I have learnt some things about astrophysics during my last ten years as researcher, but I found other things on the earth that were also worth learning. Trying to understand the mechanics of stars and galaxies is beautiful and I am glad to dedicate my time to this noble occupation. However, one should always bear in mind that we are on the earth, surrounded by other men, and in that respect we must be aware of the floor we stand on and not only look at the sky.

arXiv:astro-ph/0310368

13. Hoax

Sokal affair

From Wikipedia, the free encyclopedia

The **Sokal Affair** (also **Sokal's Hoax**) was a publishing hoax perpetrated by Alan Sokal, a physics professor at New York University. In 1996, Prof. Sokal submitted an article to *Social Text*, an academic journal dedicated to postmodern cultural studies. The submission was an experiment testing the magazine's editorial practice of intellectual rigor, to learn if an academic journal, would "publish an article liberally salted with nonsense if (a) it sounded good and (b) it flattered the editors' ideological preconceptions."[1]

The article, "Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity", proposed that quantum gravity is a social and linguistic construct; it was published in the *Social Text* Spring/Summer 1996 "Science Wars" issue. At that time, the journal did not practice peer review fact-checking, and did not submit the article for outside expert review, by a physicist. [2][3] On publication day, in May 1996, in the journal *Lingua Franca*, Sokal revealed that "Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity" was a hoax, identifying it as "a pastiche of left-wing cant, fawning references, grandiose quotations, and outright nonsense . . . structured around the silliest quotations [by postmodernist academics, he] could find about mathematics and physics".

The resultant academic and public quarrels concerned the scholarly merit, or lack thereof, of sociologic commentary about the physical sciences; the social disciplines influenced by postmodern philosophy, in general; academic ethics — including if Prof. Sokal was wrong in deceiving the editors and readers of *Social Text*; and if the journal had exercised the appropriate intellectual rigor before publishing the pseudoscientific "Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity".

15. Egyéb

Publications of the Astronomical Society of the Pacific
108: 1059–1061, 1996 November

How Long Are Astronomical Papers Remembered?

HELMUT A. ABT
Kitt Peak National Observatory, National Optical Astronomical Observatories,[1] Box 26732, Tucson, Arizona 85726-6732
Electronic mail: apj@noao.edu

Received 1996 March 4; accepted 1996 August 1

ABSTRACT. For the 165 papers published in the *Astrophysical Journal* and *Supplements* in 1954, we counted the citations during 1955–1994. They show an exponential decay with a half-life of 29 yr. Papers receiving more citations than others during the first five years do not have longer half-lives. This sample shows that observational papers have an average half-life (35 yr) that is somewhat longer than for theoretical papers (22 yr). Longer papers, such as *Supplement* ones, are cited more frequently on the average than short ones, such as *Journal* papers and, especially, Notes. Excluding Notes, 57% of the 1954 papers are still cited in 1990–1994. These durations are so long primarily because the field has been growing so rapidly—by a factor of 24 in 40 years. If normalized to a constant literature output, the average half-life would have been 6 yr. Another pertinent effect is caused by the changing fields of interest. Because studies of extragalactic objects, relative to other fields, are now seven times more frequent than in 1954, citations to them have remained nearly constant in 40 years while citations to papers in other fields have dropped off more quickly.

1. INTRODUCTION

We work hard on our research papers and hope that they will be remembered forever, but we fear that many of them may soon be forgotten. Between these extremes, where does reality occur? And which kinds of papers are remembered

years after publication, and that is unlikely to be true. Therefore we fitted a least-squares exponential solution to the data, and it is shown in Fig. 1, where the ordinates are the mean citation rates per paper per year. The mean scatter is 11.4% while the estimated mean error of the individual five-year data points is 12.7%. The decline corresponds to a half-life

Mielőtt bármit leírunk, négy szabály:

1. Írjunk érthetően (write clearly)

2. Írjunk pontosan (write accurately)

3. Légy tömör (be brief)

4. Légy logikus (build a logical structure)

Ezek közvetve meghatározzák a cikk szerkezetét is.

Cikk szerkezete

1. Cím és futócím (title, running title)

   Rövid, **figyelemfelkeltő**.

   Milyen legyen vagy ne legyen:

   1. ne legyen semleges (“A study of...”)
   2. állítson valamit
   3. ne tartalmazzon felesleges szavakat
   4. ne legyenek rövidítések benne
   5. legyen pontos nyelvileg és szakmailag (pl. rossz szintaxis, nyelvtani hibák, elgépelés)
   6. A végső változat a cikk befejezésekor alakuljon ki.

2. Szerzőlista

   Kiemelt szerzők: első, utolsó, email-címmel ellátott

   Kollaborációk publikációs szabályzatának sarokpontja pl. a szerzőlista kialakításának módozata.

   Ki legyen társszerző? Nem egyszerű kérdés.

3. Absztrakt

A cikk LEGFONTOSABB része (a cím mellett). Derüljön ki belőle:

1. MIÉRT történt az adott kutatás?

2. HOGYAN történt a kutatás?

3. MI az új eredmény és mi annak a jelentése?

   (azaz: MIÉRT OLVASSAM ÉN EL EZT A CIKKET?)

2. számú gyakorlat

Struktúrált absztrakt: pl. Astronomy & Astrophysics

ABSTRACT

Context. Resonant absorption, also known as field line resonance, can be used to describe coupling between fast and Alfvén waves in non-uniform plasmas. Since the conditions for resonant absorption occur widely in astrophysics, it is applicable in many different contexts, all of which are united by their common physics. For example, resonant absorption is known to play a major role in the excitation of ultra-low frequency pulsations in the terrestrial magnetosphere and is also a leading explanation for the decay of fast kink oscillations of coronal loops. The occurrence of non-axisymmetric conditions in the magnetosphere, and observational evidence that coronal loops may possess fine transverse structure, highlight a need to consider equilibria that vary in two dimensions across the background magnetic field.

Aims. We investigate the properties of resonant absorption when field line eigenfrequencies vary in two dimensions across the background magnetic field. We aim to place the theory on a firm mathematical footing and explore some of its key features.

Methods. Using cold, linear, ideal MHD with a straight, uniform background magnetic field, we systematically obtain a complete analytic solution for behaviour at late times. This provides a framework from which the features of resonant absorption may be understood. The time-dependent problem is solved numerically, reproducing key features of the analytic solution.

Results. Energy is deposited from a monochromatic fast wave as a phase mixing Alfvén wave, in the vicinity of the resonant surface, at which the local field line eigenfrequency matches the frequency of the driver. A generalisation of the one dimensional phase mixing length to higher dimensions is suggested, and shown to successfully estimate the finest lengthscales in time-dependent simulations. The resonant Alfvén wave is driven by gradients of the field aligned magnetic field perturbation, which is associated with the fast wave pressure. This leads to amplitude variations of the Alfvén wave that can be used to reveal the spatial form of the fast wave.

Key words. magnetohydrodynamics (MHD) – waves – magnetic fields – Sun: oscillations – Sun: corona – Earth

4. Bevezetés (introduction)

   A szakterülethez nem értő (pl. doktorandusz-kollégák) ebből tanulhassanak. Max. 8-10, de inkább csak 4-6 bekezdés, ami felvázolja a háttérben levő nagy kérdéseket, illetve a konkrét vizsgálatokat inspiráló problémákat. Legyen minél teljesebb az irodalmi kitekintés (viszont: csak azokat a cikkeket idézzük, amit tényleg láttunk is!)

   A bekezdések jó megszerkesztése nagyon fontos.

5. Módszerek, megfigyelések, számítások és elmélet

   A reprodukálhatósághoz szükséges minden információt adjuk meg.

6. Eredmények

   Mit mutatnak az adatok? Itt még ne interpretáljunk, szorítkozzunk a tényekre. Kerüljük a redundáns leírásokat.

7. Analízis, diszkusszió, konklúziók: itt adjuk meg az eredmények interpretálását. Hibák, bizonytalanságok, korlátok; összevetés másokkal.

8. Köszönetnyilvánítás: törekedjünk a korrekt teljességre, de ne locsogjunk. Kutatási pályázati támogatások hibátlan és teljes feltüntetése!

9. Irodalomjegyzék (Harvard-rendszer a csillagászati folyóiratokban: ábécé sorrendben, azon belül évek szerinti sorrend)

10. Függelék (appendix)

Részletes levezetések, egyedi objektumok jellemzői, olyan adatok, információk, melyek a cikk fő szövegtestében megakasztanák az eredmények befogadását. Egyre népszerűbbek a csak elektronikus függelékek (pl. nagy adatfájlok).