How to give a talk

Why? What? To whom? When? Where? (the 5Ws)

• Targeted audience

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To astronomers? School kids? General public? For journal club? Colloquium? In English?
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• Location

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In a small discussion room? In a (dark) lecture hall? Stadium?
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• Use proper media

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PowerPoint? Verbally, board ...
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Different fonts, sizes, copy/paste (Time New Roman, 24 points)

Different fonts, sizes, copy/paste (Times New Roman, 32 points)

Different fonts, sizes, copy/paste (LM Roman Demi)

Different fonts, sizes, copy/paste (Cambria Math)

Different fonts, sizes, copy/paste (Elephant)

不同字型、大小 (新細明體;32號字)

不同字型、大小 Chen's (標楷體;32號字)

不同字型、大小 Chen's (標楷體+Times New Roman;32號字)

不同字型、大小(特明體+Times New Roman;32號字)

段距 18

points

Astronomy Colloquium

National Central University

Understanding Type Ia Supernova with UV Spectroscopy

by

Dr. Yen-Chen Pan (潘彦丞) EACOA Fellow, NAOJ/ASIAA

at

Feb 15 (Friday) 2:00 pm Chien-Shiung Building, Room 1013

Ultraviolet (UV) observations of Type Ia supernovae (SNe Ia) are useful tools for understanding progenitor systems and explosion physics. In particular, UV spectra of SNe Ia, which probe the outermost layers, are strongly affected by the progenitor metallicity. Theory suggests that SN Ia progenitor metallicity is correlated with its peak luminosity, but not its light-curve shape. This effect should lead to an increased Hubble scatter, reducing the precision with which we measure distances. If the mean progenitor metallicity changes with redshift, cosmological measurements could be biased. Models also indicate that changing progenitor metallicity will have little effect on the appearance of optical SN data, but significantly alter UV spectra. To address this problem, we reduced and published the largest UV spectroscopic sample of SNe Ia to date. With this sample, we confirm theoretical predictions that SN Ia UV spectra are strong metallicity indicators. Our findings show that UV spectra are promising tools to further our understanding of SN Ia while directly improving the utility of SN Ia for cosmology.

An example of a colloquium announcement

with layers of assorted, eye-catching information

2018

年輕天文學清講座

中央大學 台達電子文教基金會

類星體看起來如點光源,像恆星一般,卻發出千億倍的能量,這是怎麼回事?類星體當中的超大質量黑洞 究竟是什麼東面?

沈悦 博士 (Dr. Yue Shen)

美國 伊利諾大學 at Urbana-Champaign 天文系助理教授



12/21 (五) 15:00~16:00

The Final Parsec: Time-Domain Exploration of the Inner Regions of Quasars

中央大學天文所 桃園市中壢區中大路300號

12/26 (三) **14**:00~15:00

Journey to the Center of Quasars

台達電子台北總公司 台北市內湖陽光街256號

12/28 (五) 15:00~17:00

A Life Story of Supermassive Black Holes

台中一中 台中市育才街2號科學館演講廳









An example of an award lecture

Contact Binary Variables as X-ray Sources

Kaushar Sanchawala a, Wen-Ping Chen a,b and Mu-Zhen Chiou b

^a Graduate Institute of Astronomy, National Central University, Chung-Li, Taiwan b Physics Department, National Central University, Chung-Li, Taiwan

email: kanshar@onflows.astro.ncu.edu.tw

Abstract

We present cross-identification of archived x-ray point sources with optical variable stars found in All Sky Automated Survey (ASAS). In a surveyed sky area of 300 square degrees, 36 objects were identified as possible W Ursac Majoris type. We compute the distances to the W Ursac Majoris systems and present their x-ray luminosities.

The ASAS Project

- The All-Sky Automated Survey first ran with a prototype ASAS-1 and ASAS-2 equipped with 768X512 Kodak CCD and 135/f1.8 telephoto lens to monitor stars brighter than 14 magnitudes in the I band at the Las Campanas Observatory in Chile (4).(5).
- From April 7, 1997 to June 6, 2000, more than 140,000 stars had been observed in the selected fields covering ~ 300 square degree for nearly 50 million photometric measurements.
- More than 3500 variable stars have been found (ASAS-2), of which nearly 90 % are new identifications. Among these 380 are periodic variables.
- The ASAS-3 system installed in August 2000, has discovered over 1000 eclipsing binaries, almost 1000 periodic pulsating variables, and over 1000 irregular stars among the 1,300,000 stars in the 0h-6h quarter of the southern hemisphere till date

The W Ursac Majoris Variables

- W Ursae Majoris (also called EW) variables are contact eclipsing binaries, with periods p=0.2-1.4
- Their light curves show two nearly equal minima with virtually no plateau.



Fig. 1 HIP 59683 (HD 1064M), AH Vir) is a W UMa type system with a period of 0.497528 days (http://astro.estec.ese.nl/Hippercos/education.lcA.html)

- W UMa systems are known x-ray emitters. Steinen et. al (1) examined a sample of 102 such systems and found 54 of them to be x-ray sources.
- . The x-ray emission mechanism of these systems is not clearly known but is thought to be related to stellar magnetic activity.
- A large sample of W UMa systems with x-ray emission is an important first step to shed light on their

W. L'Ma stars - Absolute Magnitude

- We made use of the ASAS-2 database of the variable stars and among the 380 periodic variables, identified 36 possible candidates of the W Ursae Majoris type
- We searched the x-ray counterparts for these W UMa stars in the ROSAT database and found that 10 of the W UMa stars had x-ray counterpart (An gular separation < 30").
- In some cases, the cross-identification was relatively straightforward, either because the nominal positions of the x-ray and optical source coincided (Fig. 2) or because no other obvious star was near the x-ray position (Fig. 3). The fig. 4 shows the light curves of a few W LIMa stars for which we found the x-ray counterpart in the ROSAT database.

DSS images: Red hex indicates the position of ASAS objects whereas the blue hox shows

• For 8 of the W UMa stars, the angular separation was less than 30" whereas for the remaining 2 it exceeded this limit. We used S. Rucinski's absolute magnitude calibration method (2), (3) to compute the absolute magnitudes of the stars and honce their distances

The exact calibration used is as given below

$$M_{T} = b_{P(V)} \log P + b_{VI} (V - I)_{\mathbb{S}} + b_{S(V)}$$

where
$$h_{\rm OVC} = -4.4^{+0.3}_{-0.6}$$
 , $h_{\rm VJ} = \pm 2.3^{+0.3}_{-0.6}$ and $h_{\rm OVC} = -0.2^{+0.3}_{-0.3}$,

which is valid over the following ranges in period and color,

$$0.27 < P < 0.63$$
 ; $0.38 < (V-I)_0 <$...21 & ...5 $< M_I < 5.0$.

Two of the W UMa stars with x-ray counterparts, have the periods or colors outside the range of the calibration. Hence, we computed the absolute magnitudes of 8 W UMa stars in I band and their distances

W UMa stars - X-ray luminosity

We computed the x-ray luminosities for the W UMa stars from their x-ray counts. The flux was obtained by multiplying the energy conversion factor with the count rates (1).

 $ECF = (5.3HR - 8.7)10^{-12} erg cm^{-2} cts^{-1}$

where the hardness ratio IIR = (II - S)/(II + S), for which IIand S denote the source counts in the hard (0.5-2.0 keV) and soft (0.1-0.4 keV) passbands of ROSAT, respectively.

Table 1 lists the W UMa stars with their computed distances and their X-ray luminosities.

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d is the mean distance in persec and L, is the mean x-ray luminosity in erg.se

X-ray luminosity vs. rotation

To study the interplay between stellar rotation and magnetic activity, we see that for single stars (Fig. 5) the x-ray luminosity increases with rotation, until $P \le 1$ d, for which saturation occurs. The W UMa stars are tidally locked and all have periods below 0.63 d. As fast rotators, W UMa stars offer a good tool to investigate such relationship in contacting binary environment. Fig. 6 plots L_x versus period for W UMa stars, with data from (1) and (8) and our work. It anpears that the faster an W UMa star rotates. the weaker its x-ray emission is, which may also be hinted in the single star data. The actual reason of this 'anti-correlation' is unknown, and we plan to study an enlarged W UMa sample (e.g., ASAS-3) for their x-ray emission to shed light on



Fig. 5 X-ray luminosity vs. rotation of field dwarfs (crosses) and clus ter stars (squares). Leftward arrows indicate field stars with periods derived from exist data; taken from (7).



Fig. 6 The points in blue color are the values taken from (1), and in green color are the values taken from (B). The points in red color are the ones we obtained for the W UMa stars from ASAS-2.

References

[1] K. Stępień et. et. in A&A 370,157, (2001)

[2] S. Rucinski in PASP 106,462, (1994)

[3] S. Rucinski in A.J 113,407, (1997)

[4] G. Pojmanski in Acta Astronomica 47,467,

[5] G. Pojmanski in Acta Astronomica 50,177,

[6] G. Pojmanski in Acta Astronomica 52,397,

[7] N. Pizzolato et.al in A&A 397, 147, (2003) [8] P. A. McGale et. al in MNRAS 280, 627,

Acknowledgments

KS would like to thank Yang-Shyang Li, Chin-Wei Chen and Wen-Hau Yeh for all the help and to make her stay (both academically and otherwise) at NCU very enjoyable Last update: April 17, 2003

Deep Intermediate-Band CCD Photometry of Globular Cluster M13 and Its Stellar Population

Yang-Shyang Li & Wen-Ping Chen Graduate Institute of Astronomy, National Central University, Chung-Li, Taiwan email: m909003@astro.ncn.edu.tw

Abstract

We present CCD photometry, in 13 intermediate bands covering from 450-1000 nm, on the galactic globular cluster M13 (NGC 6205). The data - effectively low-resolution spectroscopy - were taken by the 60/90 cm Schmidt telescope, with a 1-degree field, as part of the Beijing-Arizona-Taipei-Connecticut (BATC) color survey. The spectral energy distribution of individual stars in the outer region of the cluster provides information of their membership and of the evolutionary status of the cluster. We will also derive surface color gradient of the unresolved core, from which stellar population and the dynamical status of the cluster are inferred.

The Galactic Globular Cluster M13

- M13 (NGC6205, $\alpha = 16^{\circ}39^{\circ}54$; $\delta = 36^{\circ}33^{\circ}.2$), one of the biggest and prominent galactic globular clusters in the northern hemisphere, discovered by Edmond Halley in 1714.
- Distance to the sun: 7.9 km
- Metallicity [Fe/H] = -1.54, a low metallicity GC • Core radius: 0.78'
- Tidal radius: $25.18' \sim \pm pc$ (Harris, 1996)
- The surface brightness profile is well fitted by King model.

BATC Color Survey

The Beijing-Arizona-Taipei-Connecticut (BATC) Color Survey of the Sky (http://vega.bac.pku.edu cm/batc/title/index.htm) (Fan et al., 1996) is a large field and multi-color photometry project. The main goal of BATC is to obtain the SED of every celestial object in the program fields and to classify special objects such as QSOs and active galaxies based on SEDs with efficiency.

The BATC filter system including 15 intermediate band filters is designed to avoid the contaminations of sky background emissions. The transmission curve of each filter is shown in Fig.1.

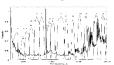
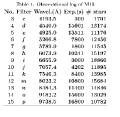
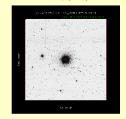


Fig.1 BATC filter system

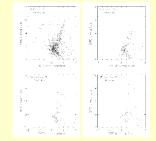
The BATC observations on M13 (see Table 1 for details) are performed with the 60/90 cm f/3 Schmidt telescope during 1995 to 2002. The telescope is equipped with a Ford 2048×2048 CCD which gives a $58' \times 58'$ field of view (plate scale=1.67"/pixel).



M13 in BATC p (9738 \hat{A}) band.

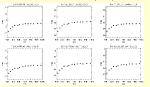


Color-Magnitude Diagram (CMD) & Stellar SEDs

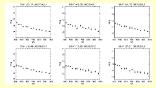


The BATC CMD is deep enough to allow for stellar population analysis of post-main sequence and some main sequence stars.

Red Giant Branch Stars (RGBs)



Blue Horizontal Branch Stars (BHBs)



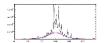
The BATC photometry provides unique information of the spectral type and existence of peculiar spectral lines of each object in the field, more so than a CMD

Data Reduction and Calibration

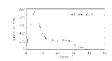
- The coordinates and instrumental magnitudes of stars are resolved with BATC Pipeline II (a customized DAOPHOT package).
- . BATC magnitudes (Zhou et al., 2002) are defined on the Oke-Gunn (1983) system as AB, magnitudes. The AB magnitude relates to physical energy flux
- · After photometric calibration, we obtained the SED of resolved objects.

Stellar Population and Color Gradient

Color gradient has been seen almost exclusively in postcore-collapse clusters (in M30, M15 and 47 Tuc, Piotto et al. (1988), Burgarella et al. (1996), Guhathakurta et al. (1998)) which show a nower law cusp in the core of their surface brightness profiles. So far there has been only one prominent case of color gradient detected in a King-type globular cluster, NGC 7089 (Sohn et al., 1996). The analysis of individual stellar SEDs in the outer region provide us the information of stellar population so does the color gradient, and after smoothing the extended core of M13 with a proper running-box median filter in order to mask the giant stars, we would exploit if such color gradient (hence stellar population or chemical abundance distribution)



A Halo in M13???



In the histogram of angular distance from an object detected in i band to the center of M13, we can depict an enhancement in star numbers around the tidal radius. The genuineness of the peak or its possible causes still need further examinations and explanations.

References

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Guhathakurta, P., Webster, Z. T., Yanny, B., Schneider, D. P. & Bahcall, J., 1998, AJ, 116, 1757 Harris, W. E. 1996, AJ, 112, 1487

Piotto, G., King, I. R. & Djorgovski, S., 1988 AJ, 96,

Sohn, Y.J., Byun, Y.I., & Chun, M.S., 1996, Astrophys. Space Sci., 243, 379 Zhou, X. et al., 2003, A&A, 397, 361

Acknowledgments

We would like to thank Zhou Xu and Jiang Zhao-Ji for the great help on data reduction and photometric calibration during Y. S. Li's visit to the Beijing Astronomical Observatory in November, 2002

Last update: April 18, 2003

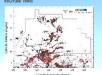
Young Stellar Population in the Lupus 3 Dark Cloud

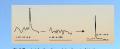
Fong-Yi Huang (貴峰毅), Wen-Ping Chen (陳文屏)& Zhi-Wei Zhang (張譽威) Graduate Institute of Astronomy, National Central University, Jhongli 320, Taiwan

Abstract: The Lupus dark clouds are among the nearest star-forming regions. We analyzed a 30°x30° field of the UK Schmidt H-alpha images centered around the 2 A-topse stars of the Lupus 3 cloud to identify H-alpha emission stars. Together with the 2MASS infrared colons, a list of 46 candidate T Tauri stars have been identified, among which 22 are new identifiedation.

Lupus 3 Dark Cloud

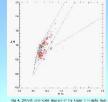
The Lupus dark cloud complex is one of the nearest stor-forming regions. Among several dark clouds in Lupus (Fig. 1), the Lupus 3 cloud has the strongest CO emission. Schwarz (1977) in an J cloud has the stronger GO emission. Sciourus (1977) in an objective prime Heighs univery of evolution that forming reports, found 41 emission since it also also give the consistent of the emission of the constant T Taria rises (CTFS) which are characterized by strong Heighs emission and R occess. Kratter of 3.d.(1997) used ROSAT duri to societal for weakfolder T Taria rises (WTTSs). They found that the WTTS speed on over the whole Lepse ann-Borning argins. In this study or used the activation of the strong and non-diffracted data to conduct a comprehensive survey of the young scalar population in the Lapus 3 data.





Data Reduction We downloaded the H-alpha and SR images of the Lupus 3 cloud

the assimination for resignar and set images for the Lipha's 2 continuum. We salled the star counts, measured by aperture photometry, in the H-aphra and SR images by trial and error, so that the migrity of stars away from the clouds, i.e., likely non-PMS stars, have null net counts. The continuum image was then subtracted from the H-alpha course. The continuum image was tient subsection from the Praiphas image (line plan) continuum) to get the line image (Fig. 2) from which the net line flux is measured for each stat. Choosing a different scaling factor world affect the absolute flux level, which is never relevant anyway because of the nonlinearity of the photographic data, but does not change the relative order of the H alpha strength, i.e., relative strong enviseinm line stars remain-ngardless of the scaling. At the end, a list of stars with absceraling II alpha line strength (equivalent width) is positived. These H alpha unission stars are the CTTS carnidates.



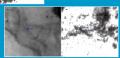
Triggered and Induced Star Formation in the Orion and Monoceros Molecular Clouds











A photo of yours?

A QR code of the poster or of a relevant paper of yours?

Light Curve Analysis of AZ Capricorni - A Low-Mass Member in the Beta Pictoris Moving Group

C. Y. Chen1 (陳長雄), & W. P. Chen1,2 (陳文春) Dept. of Physics, National Central University, Taiwan ²Institute of Astronomy, National Central University, Taiwan

AZ Capricorni (BD 17%128), is an X ray source and a variable star with uncertain variability. The star is one of the members in the Beta Pictoris moving group (BPMG), which consists of 28 known stellar systems sharing the similar space moving motion as Beta Pic, the famous star with a prominent planetary debris disk. The BPMG, at a typical distance 36 pc from the earth, and with an age of 20 Myr, represents an interesting case of dissolving stellar groups after star formation out of parental molecular clouds. Here we present the light curves of AZ Cap, a low-mass member in the BPMG, collected with telescopes at Tenagor and at Lulin from 2010 to 2012 to shed light on the nature of this star.

Movine eroups of stars

It is widely accepted that stars are formed in groups out of malecular clouds, with dozens to thousands of members. These clusters dissociate with time (Zuckerman et al. 2001), but the thenmembers still share the same motion through space. Members in a moving group have the same origin, so even an relatively old system could be diagnosed of its evolutionary status by studying Individual members widely separately in the sky.

The Beta Pic Moving Group

The Beta Pictoris moving group (BPMG) is a young moving group of stars located relatively near Earth, sharing a common motion through space as well as a common origin. Beta Pictoris, the title member of the BPIMG, has a prominent planetary debris disk

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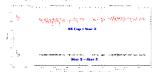
AZ Capricorni

AZ Cap (BD-17' 6128, RA=20:56:02.7, DEC=-17:10:54, J2000), a member of the BPIMG, is 47.7 pc from the Earth (Zuckerman et al. 2001). The star emits copious X rays (Chen et al. 2006) is of spectral type K7, and is a known variable with a possible period of about 3.4082 day (Messina et al. 2010), on the basis of the Alf Sky Automated Survey (ASAS, Pojmanski 1997) data. The ASAS gives V=10.48, AV=0.08 and classifies the star as a CW-FU (W Virginis Cepheid) or BY+UV (rotating variable) type of variable (Pojmanski 2004). The 2MASS data, I=7.85, H=7.25, and Ks=7.04 suggest indeed a late type dwarf. The nature of AZ Cap, regarding the

origin of the X ray emission or its flux variability, however, remains elusive. Here we present the study of the star including the photometric monitoring with a time span of 2 years from 2010 to 2012. The figure on the right shows the finding chart of the AZ Cap field along with the 4 possible reference stars for photometric comparisor



We use the 0.81 m Tenagra II (32") telescope in Tueson, Arizona, USA and the SLI (40 cm) at Lulin Observatory to perform Imaging photometry of AZ Cap in the B. V and R bands. In 2010 the target was observed only in three nights with 48 measurements. The monitoring was intensified in 2011 (from September 26 to December 11), and continued in 2012. In each session we usually started with a complete set of BVR images, followed by a few R band images within a night. normally with an exposure time of 10 seconds. The differential light curve of AZ Cap, mag (AZ Cap) minus mag (Ref#3), from end of 2010 to end of 2012 is shown below. The variability is obvious, when compared with mag (Ref#2) minus mag (Ref#3).



Periodicity

The 2012 light curve, analyzed by the NASA Exaplanet Archive Periodogram Service http://excplonetorchive.pnc.cultech.edu shows a possible period of 3.4 d (see figure on the right). Interestingly, the 2011 data, generally with much larger

variation amplitude, did not seem to show the same period.

Chen et al. (2006) analyzed the X-ray property of AZ Cap, using an earlier ASAS classification as an W UMa star. While the period and X-ray emission are consistent with the classification the quasi periodic, and often abrupt



Chen W. 2. Sarch exids. C. 8 Chin. M. C. 1006. Astron. L. 131, 950 Mess na et al. 2010, Astron. 6: Astrophy., 528, A15 Mess et et l. 2010, Agron. Is Astrophy, 370, 415 (o)(mansk), G. 1097, Acca Astron, 47, 465 Pojmanski, G. 2004, As Astron, 55, 97 Zustamus et al. 2001, The Astrophy, J. 1et., 562, 187 Zustamus et al. 2001, The Astrophy, J. 1et., 562, 187 Zustamus et al. 2004, Astr. Rev. of Astron. & Astrophy, 42, 885

Diagonosing triggered star formation in the cloud complex Sh-142/NGC 7380

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Figure 1. Color compos

image H-alpha (red) and OfIII]

(green) of Sh-142 and bright

rimmed cloud BRC 43. The

black square marks where deep

optical imaging is available

Protostars

distributions

Introduction and Motivation

Star formation does not occur in isolation, but rather in a molecular cloud complex, it is an intricate interplay of gas, dust and stars already in existence in the vicinity. Fierce stellar winds or UV radiation from massive stars may disperse nearby cloud, hampering further starbirth. Alternatively, under certain conditions, the stars could photoionise the surface of a nearby molecular cloud (a bright-rimmed cloud), leading to an implosive shock to trigger the formation of the next generation of stars. Here we present such evidence of triggered star formation in a molecular cloud complex.

Target of Study

Here we investigate the triggered star formation activity in Sh-142 /Sharpless 142, a prominent HII region at 2.4 kpc, associated with the bright rimmed cloud BRC 43, and the open cluster NGC 7380. The spectroscopic binary DH Cep dominates ionising activity of the region.

Data

- Archival NIR (2MASS) and MIR (WISE) data
- Optical BVI images for BRC 43
- Molecular emissions of ¹²CO/¹³CO/C¹³O

Young Stellar Candidates

- Πα emission stars near BRC 43 (Ogura et al. 2002), and NIR-excess stars (with dusty circumstellar disks) are pre-main sequence stars signifying recent star formation.
- MIR-excess stars signpost embedded objects with ongoing star formation. They are selected by IR colors Koenig et al. (2012)

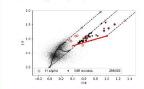


Figure 2. 2MASS/NIR color-color diagram of all stars (gray), NIR excess stars (black) and Ha stars (red).

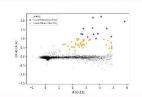
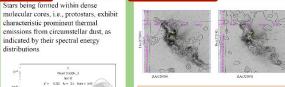


Figure 3. WISE/MIR color-color diagram of all stars (gray) and of Class I (blue) and Class II (orange) YSOs selected by

Molecular Clouds

BRC43



Sh-142

Figure 5. (Left) **CO (1-0) and (Right) **CO (1-0) contours or the H alpha image. Candidates of Class I (red) and Class II (yellow) YSOs selected by IR colors are marked.





NCG 7380

Figure 6. 12CO integrated emission (Left) in velocity range - 50 km/s to -35 km/s, and (Right) in velocity range -35 km/s to 0 km/s

Evidence of triggered star formation

Figure 4. The spectral energy distribution of

an example a Class I object (protostar)

YSOs line up along the interface between molecular gas and ionized gas(HII).

- Class I sources are found to be embedded in molecular clouds.
- Class II sources are mostly located at the periphery of the molecular clouds or HII region
- No sources deeply embedded in BRC 43 are found in our data.

Ogura K., et al., 2002, AJ, 123, 2597 Chen W. P., et al., 2011, AJ, 142, 71

Koenig, X. P., et al. 2012, ApJ, 744, 130

How to give a talk 44 point, Times New Roman

Why? What? To whom? When? Where? (the 5Ws)

32 point, Times New Roman

• Targeted audience 32 point, LM Roman 9

To astronomers? School kids? General public?
For journal club? Colloquium? In English? 32 point, LM Roman 9, Italic

• Location

In a small discussion room? In a lecture hall? Stadium?

• Use proper media

PowerPoint? Verbally, board ...

How to give a talk (cont.)

• Be prepared

Expect to show only 10% of what you know Hide some slides after the end

- Be confident
- Practice efficient language
- Write legibly

Text & graphics; do not overcrowd the page vs put immediate relevant contents side by side

• Stick to the time limit

Rule of thumb, e.g., 10~12 slides for a 15 min talk

How to give a talk (cont.)

- Exercise gestures/body language (walk around sometimes)
- Do **NOT** block the screen
- Stick to the time limit
- Pay attention to your audience
- Sprinkle a touch of humor (but only a touch!)

Exercise:

- Give an "elevator talk" about your research project.
- Limitations (How long, which elevator ②)?
 - ✓ To whom?
 - ✓ What do they care?
 - ✓ Why should they care? Why should you?

How to do a presentation ...

Why? What? To whom? When? Where?

- Be prepared (to show only 10% of what you know/prepare)
- Be confident
- Practice efficient language
- Use proper media (overhead, slides, PowerPoint; words only, blackboard ...)
- Write legibly (text & graphics)

How to do a presentation ...

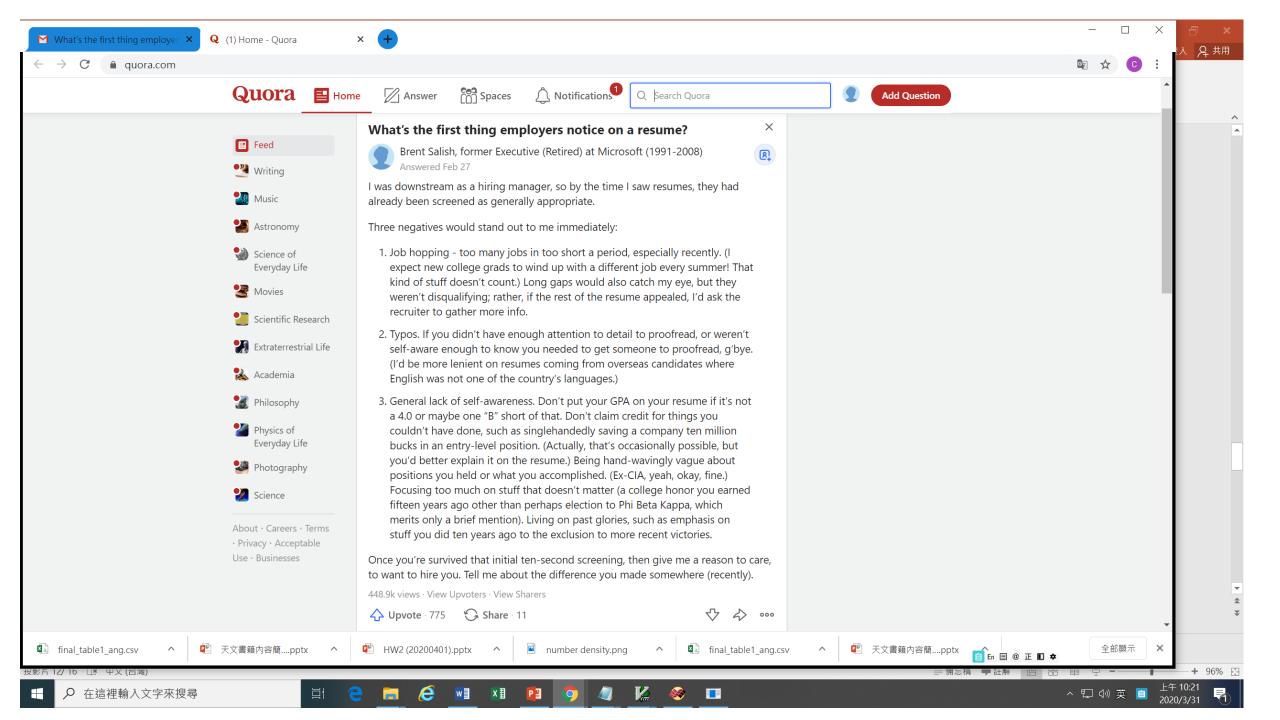
Why? What? To whom? When? Where?

- •Be prepared (to show only 10% of what you know/prepare)
- Be confident
- Practice efficient language
- •Use proper media (overhead, slides, PowerPoint; words only, blackboard ...)

Write legibly (text & graphics)

How to be an audience?

- Do homework/preview work (what do you expect to learn?)
- Learn a thing or/then two
- Do **NOT** chat with others
- Ask questions during and after the talk
- Describe what you have learnt to a friend.



How to writing an email

Clear; Complete; Concise; Courteous; Correct

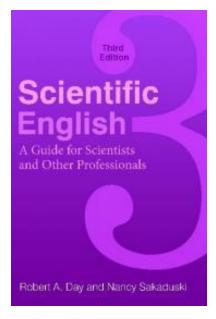
- Fast, but still formal, especially for the first time "Stay hi with your best friends."
- Draft and proofread it before sending
- An informative "Subject"
- Make it short (2 paragraphs? 2 bullets?) One subject at a time. "What results / actions do you expect?"
- Start/end with a pleasant greeting.
- Do not shout; no emojis; not many exclamation marks.
- A serious/professional email ID

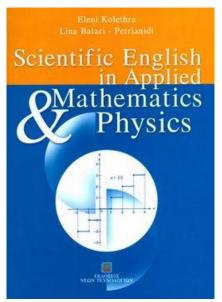
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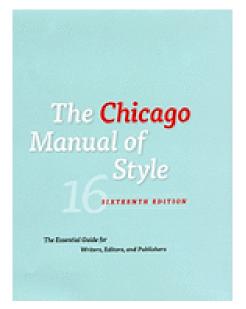
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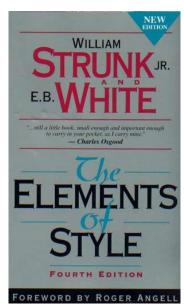
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