科技寫作(Scientific Writing)

Week 5 (Oct. 13 – Oct. 17)

Award and Proposal for Other Resources

獎項與其它資源申請基本原則

南朝-劉勰<文心雕龍‧徵聖>

泛論君子，則云「情欲信，辭欲巧。」此修身貴文之徵也。
然則志足而言文，情信而辭巧，迺含章之玉牒，秉文之金科也。
...

...

文成規矩，思合符契。或(1)簡言以達旨，
　　　　　　　　　　　或(2)博文以該情，
　　　　　　　　　　　或(3)明理以立體，
　　　　　　　　　　　或(4)隱義而藏用。

獎項 (論文獎、吳健雄獎, etc)

Award this prize to you do not embarrassed the prize

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Benchmark: compare yourself with the awardee in the previous years

獎項 (論文獎、吳健雄獎, etc)

Award this prize to you do not embarrass the prize
Benchmark: compare yourself with the awardee in the previous years
若獲得重要獎項，則在CV上為自己跟某些知名獲獎人同等級之強力證明

獎項 (論文獎-中山大學近10年得獎紀錄)

- 2022

優等	張晏誠	國立中山大學	碩士	鰭式場效電晶體及矽與矽鍺金氧半電容器可靠度之研究	張鼎張

- 2018

優良	高莛蕙	中山大學物理系	博士	Perovskite-related-structure Materials with High Pressure Synthesis and Their Physical Properties	楊弘敦

- 2017

優良	吳紘丞	中山大學加速器光源與中子束應用國際博士學位學程	博士	Novel properties in spin-frustrated systems Cu_2OSeO_3, Cu_2OCl_2, and $Cu_3Bi(SeO_3)_2O_2Cl$	楊弘敦

- 2016

優良	施敏權	中山大學物理所	博士	Atomic-scale observation of the interfacial band alignment and photogenerated carrier distribution in polymer-based and perovskite-based solar cells	楊弘敦邱雅萍

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獎項 (論文獎、吳健雄獎, etc)

即早查清楚申請方式

獎項 (論文獎、吳健雄獎, etc)

即早查清楚申請方式
需時時維護評審項目(e.g., 論文數, etc)

獎項 (吳健雄獎)

- 一、**台灣物理學會**為獎勵女性學士班、碩士班、博士班學生從事物理相關領域研究,以提高學術水準,特訂定本辦法。
- 二、獎勵對象
- 為學業成績或研究工作表現特別優異之本會女性會員,限物理相關領域。
- (1)學士:需修業滿二年以上之在學學士生或取得學士學位未滿二年之畢業生,畢業日期以畢業證書為準。
- (2)碩士:需修業滿一年以上之在學碩士生或取得碩士學位未滿二年之畢業生,畢業日期以論文口試通過日為依據。
- (3)博士:需具博士學位候選人資格之在學生或取得博士學位未滿二年之畢業生,畢業日期以論文口試通過日為依據。
- (4)申請人或指導教授應為本會會員。
- 三、名額
- 每年獎勵名額依申請通過經費金額,以四到八名為原則:
- (1)學士生每名新台幣10,000元。
- (2)碩士生每名新台幣20,000元。
- (3)博士生每名新台幣50,000元。
- 四、審查方式
- 審查標準依學期修課成績單及申請資料(含代表作及指導教授等推薦信評語)等加以審查決定人選。
- 審查方式採二階段:第一階段為書面審查,通過者得進行第二階段口頭報告審查。
- 五、受理時間
- 本會學術處於每年**6月1日至8月31日**於學會官網公開受理申請。
- 六、申請資料
- (1)申請書
- (2)成績單
- (3)指導教授和另一位物理學術界教師的推薦信
- (4)代表作。
- 七、本辦法經本會學術處及理事會會議通過後施行,修訂時亦同。

獎項 (吳健雄獎)

第十七屆 (2019)				
林昀萱	中山大學物理所	博士	A Study of Effects of Metal Gate Compostion on Performance in Advanced n-MOSFETs	張鼎張
黃馨平	中山大學光電工程所	博士	低溫多晶矽薄膜電晶體之電性分析及熱載子效應劣化之探討	朱安國
謝妮恩	中央大學物理系	博士	On the Photodesorption of CO2 Ice Analogs: The Formation of Atomic C in the Ice and the Effect of the VUV Emission Spectrum	陳俞融
林恩慈	清華大學天文研究所	碩士	Case Studies of Gravitational Wave Events in the Multi-messenger Era	江國興
柯嘉琳	清華大學天文研究所	碩士	Resolving linear polarization due to emission and extinction of aligned dust grains on NGC1333 IRAS4A with JVLA and ALMA	賴詩萍
鄧郁璇	臺灣大學物理學系	碩士	Physical Conditions and Kinematics of the Filamentary Structure in Orion Molecular Cloud 1	平野尚美
第十六屆 (2018)				
李悅寧	巴黎第七大學天文與天文物理研究所	博士	Formation and fragmentation of stellar proto-clusters	Patrick Hennebelle
		碩		

獎項 (論文獎)

- 一、台灣物理學會為提昇國內物理領域研究所研究生之研究水準，並肯定、鼓勵其研究成果，特訂定本辦法。
- 二、獎勵對象
- 為在申請截止日期前二年內於國內大專院校畢業之碩博士，畢業日期以論文口試通過日為依據。申請人或指導教授應為本會會員。
- 三、推薦資料
- 包括：
- 1.學位論文。
- 2.相關研究所推薦函乙封。
- 3.被推薦人個人資料(包括學歷、著作目錄、及身份證影本)。
- 4.被推薦人須提供參賽論文為本人的創作且無抄襲或剽竊之具結書。
- 四、論文評分標準
- 包括：論文在研究上之價值與貢獻占四十%，論文內容是否具創意占四十%，論文的架構占二十%。
- 五、受理時間
- 本會學術處於每年**7月1日至8月31日**，於學會官網公開受理申請。
- 六、研究生學位論文評審委員會之成員由學術委員會遴選。
- 七、被推薦之論文經由學術委員會遴選評審委員會評選，選出至多三名特優者於物理年會中表揚，並頒發獎牌及獎金各貳萬元。另外選出優等若干名，於物理年會頒發獎狀及獎金各參仟元。
- 八、本辦法經本會學術處及理事會會議通過後施行，修訂時亦同。

獎項 (論文獎)

作	恩	台灣大學物理系所	士	白鲸類的卡定二維拓撲的電子性質研究	馮天時
佳作	黃振庭	國立陽明交通大學光電工程學系	博士	Study of topology manipulation for novel laser cavity design	盧廷昌
佳作	廖重皓	國立臺灣師範大學物理系	碩士	鋰氧氣電池之釘貴金屬催化反應機制	胡淑芬
佳作	劉立中	台灣大學物理系	博士	電磁波於二聚體間激發的極化電荷強化現象和微波燒結中的非熱效應	朱國瑞 陳仕宏 張存續
佳作	劉俊佑	中央大學物理系	博士	Spatiotemporal dynamics of aggregation and interface fluctuations of cancer clusters in densifying cancer-endothelial cell mixtures	伊林
佳作	鄭宇晉	台灣大學物理所	碩士	以大亞灣實驗之逆β衰變信號測量碳12之中子捕獲截面	熊怡
佳作	謝柔淳	國立臺灣師範大學光電工程研究所	碩士	設計連續譜中的準束縛態應用於超穎介面之三倍頻訊號增益	蕭惠心、李敏鴻
佳作	謝慶霖	國立中央大學物理系	碩士	Growth Dynamics and Electronic Properties of Hexagonal Boron Nitride Synthesized with Different Nitrogen/Hydrogen Gas Ratios	溫偉源
佳作	鍾佳穎	國立台灣大學物理所	碩士	利用 SMA 200–400 GHz 勘測約束 Class II 原行星盤的塵埃譜指數	朱有花

獎項(論文獎、吳健雄獎, etc)

1. What is your achievement

2. Why your achievement is important
(it should be more important than other people's achievements)
Novelty

獎項(論文獎、吳健雄獎, etc)

1. What is your achievement

2. Why your achievement is important
   (it should be more important than other people's achievements)
   Novelty
   Scientific impact

獎項(論文獎、吳健雄獎, etc)

1. What is your achievement

2. Why your achievement is important
   (it should be more important than other people's achievements)
   Novelty
   Scientific impact
   Technical breakthrough

獎項(論文獎、吳健雄獎, etc)

1. What is your achievement

2. Why your achievement is important
   (it should be more important than other people's achievements)
   Novelty
   Scientific impact
   Technical breakthrough
   Other difficulties

獎項 (論文獎)

作	恩	台灣大學物理學系	士	石墨烯與其他二維材料的電子性質研究	馮文駒
佳作	黃振庭	國立陽明交通大學光電工程學系	博士	Study of topology manipulation for novel laser cavity design	盧廷昌
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獎項 (論文獎)

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佳作	黃振庭	國立陽明交通大學 光電工程學系	博士	Study of topology manipulation for novel laser cavity design	盧廷昌

1. 數據量大，工作量非常巨大
2. 數據校正困難 (difficulties)
3. 結論imply (Scientific Impact)
   (i) 過去大部分同領域工作皆系統性低估某物理量一個量級
   (ii) 因此，過去依據測量結果建立的理論也都不對

佳作	謝慶霖	國立中央大學物理系	碩士	Growth Dynamics and Electronic Properties of Hexagonal Boron Nitride Synthesized with Different Nitrogen/Hydrogen Gas Ratios	溫偉源
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林恩慈	清華大學天文研究所	碩士	Case Studies of Gravitational Wave Events in the Multi-messenger Era	江國興
柯嘉琳	清華大學天文研究所	碩士	Resolving linear polarization due to emission and extinction of aligned dust grains on NGC1333 IRAS4A with JVLA and ALMA	賴詩萍
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獎項 (吳健雄獎)

1. 首次發現某種現象(Novelty, Scientific Impact)
2. 觀測及數據校正困難度皆為領域天花板(Technical breakthrough, difficulties)

柯嘉琳	清華大學天文研究所	碩士	Resolving linear polarization due to emission and extinction of aligned dust grains on NGC1333 IRAS4A with JVLA and ALMA	賴詩萍
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Resources (e.g.,研究獎助)

You are requesting resources (money)

Resources (e.g.,研究獎助)

You are requesting resources (money)

Why you should give me your money

Resources (e.g.,研究獎助)

You are requesting resources (money)

Why you should give me your money **instead of the other applicants**?

Resources (e.g.,研究獎助)

1. Your past track record (reputation)

2. Research plan

3. Why your research is important and deserves support

4. Plan:
   (i)   timeline
   (ii) cost (sufficiently detailed breakdown)
   (iii) expected results

Your past track record (reputation)

1. 用以佐證你拿了補助以後能有效利用

   (i) 你是否有在申請的研究領域內進行研究的經驗?
      有論文發表最佳。
   (ii) 是否有其它配合的資源
      (a) 儀器
      (b) 合作者 or 指導者
      (c) 其它有利條件

Research plan

1. 具體問題或目的 (供評估價值)
2. 具體approach (供評估可行性)

注意研究問題與approach中使用的各種假設的自洽性！

Timeline and cost

1. 精準估計cost，不要太多，也不要太少

2. 合理規劃timeline
   (1) How many hours you actually work in your lab per week?
      Be honest to yourself and be realistic.
      If you, on average, only spend 10 hours a week in the
      last 2 years, it is very unlikely you will make it 20 in the next year.
   (2) What can you accomplish with 10 hours of working?
      If you need 10 hours to carry out a specific task,
      do not assume that it can be shortered to 8 hours.
   (3) Estimate the total amount of work that can be done over the
      supported period.

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   supported period.

   審核者不乏行家。過度樂觀的估計可能會被打槍。

Start Early

Usually, you need to polish your important proposals many times. And sometimes you need to sit on your draft for days or weeks before coming back to polish it with refreshed eyes/mind.

When you are junior, be REALLY EARLY!
Your supervisor(s)/collaborator(s) may need to take care of their own proposals and other collaborations when the deadline is approaching.

(help your supervisor(s)/collaborators. Use Grammarly or ChatGPT to clean up the typos and grammatical errors before sending to them.)

Use a Positive Tone

Do not say something like "our previous observations suck and therefore we need new data".

Say "the new observations will make improvement over the previous ones in this and that sense". And be quantitative as far as possible (e.g., you are making the observations deeper by a factor of X).

Avoid Jargon

If you do not have a sense of what is jargon, ask your
friends who are not in the same research field to
proofread your proposal.

Also, do not use too many acronyms (e.g., FRVF of SBUhzMSMBHs for
Faraday-Rotation variational frequency of submillimeter bright ultra high redshift merging super
massive black holes… this is too much for me. Do some thinking to help your reader by simplifying
the writing).

For people who cannot remember or do not
want to memorize the actual meanings of the
acronyms, your proposal will become unreadable.

Spend Time Preparing Nice Figures

Make it Smooth

Test your friend: after reading your proposal for 5-10 mins, what do they remember?
In the distributed ALMA review, the reviewers are not too different from them.

The text and figures are not a stack of information. They should not
just being there. Make your design.
The information should be displayed in a way that people can pick
up and remember the most important points smoothly.

Place figures at the right page such that people will naturally see it
when you are referring to it. Avoid letting people check back and
forth your paragraphs.
The logic should be one-way instead of a loop, or loops.

A member in the review panel may have 30~50 proposals to read,
grade, and compose feedback comments. Many people I know try to
accomplish this task in 2 working days (i.e., 16 working hours) since
it is very painful. In the initial screening, you only have their 5~10
minutes to read your 2 pages text plus 2 pages figures and tables.

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Do Not Assign Homework to the Reviewers

If it requires checking some specific references to understand your proposal, your proposal is doomed. This is not what ideally should happen. But this is the reality, unfortunately.

Nobody will ever read into any reference you provide.

To some extent, the references are to show that you are familiar with the recent development.
You should not attempt to educate the reviewers with the references.

Tailor Your Proposal for the Prospective Readers

For example, if you know people in a certain big
consortium are going to review your proposal, then do
not attack their work in a bad way (e.g., The XX consortium make a
unbiased direct imaging survey for exoplanets. Unfortunately, they detected nothing or nothing new).

The deficiency of a previous project is often our
motivation to propose a new one. But rephrase (e.g., The XX
LP has provided a stringent upper limit to OO. In this work, we change the survey strategy to
specifically improve the constraint(s) on WW).

Make a Balance Between Humbleness and Confidence

Do not over-advertise your work. If you say your experiment will win a Nobel prize, the reaction of most of the readers will be "Oh yeah?", and then start to challenge every single point you made.

But also do not say something like "Our previous experiments suck". Everybody knows that Asians tend to say so, but they never actually calibrate this culture difference.

Be Honest

Do not propose what you are not going to do.

When you already know that a specific assumption is unrealistic, or when you do not know whether or not a specific assumption is unrealistic, do not make that assumption. You should be able to justify your assumption based on some physical principles or observational evidence, even if you do not have space to explicitly justify them. "It is the best we can do" is not a good excuse for making an unrealistic assumption. It sounds bad to some of us.

Do not propose the analyses that you already know is unfeasible It can happen that you only know your experiment is unfeasible during the preparation of your proposal. In this case, terminate the project. Be very careful when you are proposing an experiment that you are not certain about whether or not they are feasible or relevant. Sometimes you do not actually know the feasibility before you receive the data (e.g., when you try to propose the first blind search for exoplanets). Some of such experiments are in the high-risk high-reward category. But you should at least have some justifiable ideas in mind why it might be feasible. It is OK to try it, perhaps, starting from a de-scoped pilot study.
Be honest to yourself. Do not pretend that you do not yet kno

What Usually Happened to Me

It seems worse than random.

The best proposal gets the worst grade.

This is particularly bad when you are trying to do something that is unique or technical advanced.

I still don't find a good solution to this problem.

What I Usually Do

1. Pretend that I am composing the introduction section of a proto-paper. I usually really copy-paste my proposal to a paper.

2. Take proposal-writing as an opportunity to prepare your publication-level figures for the ongoing work, as far as possible.

3. Take proposal preparation as an opportunity to make deep communication with colleagues in the world. It often kick-off some studies that can be based on existing data, or kick-off some theoretical studies.

4. Read papers to extend my knowledge base and skill sets.