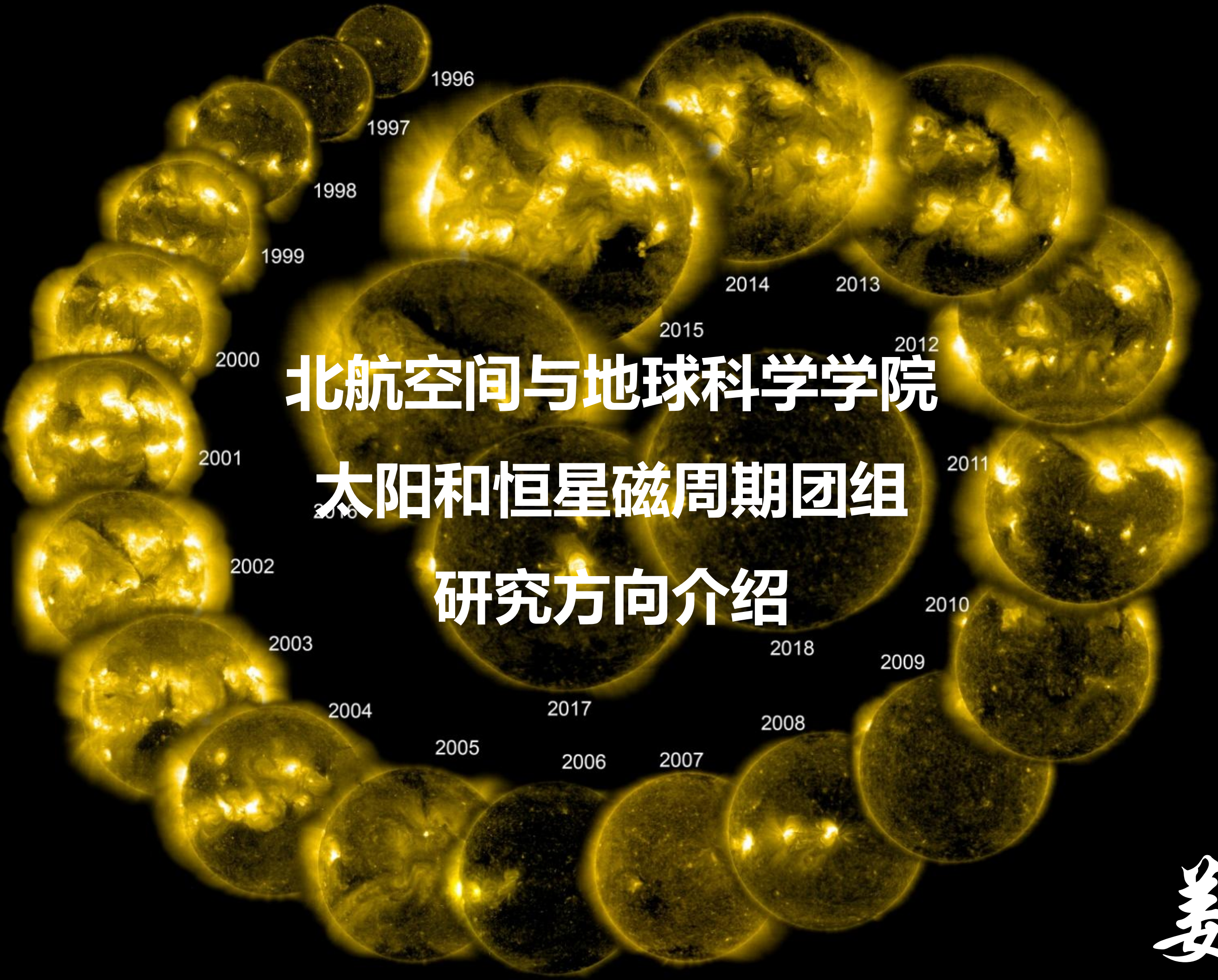


北航空间与地球科学学院

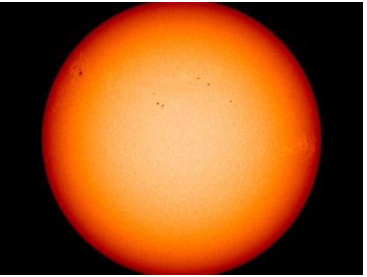
太阳和恒星磁周期团组

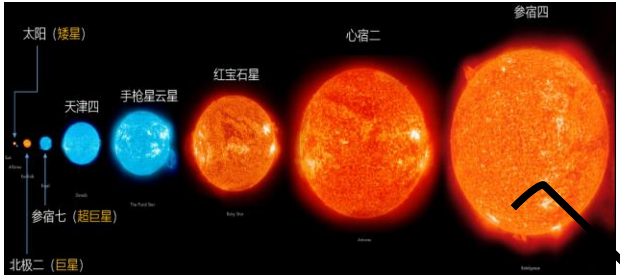
研究方向介绍

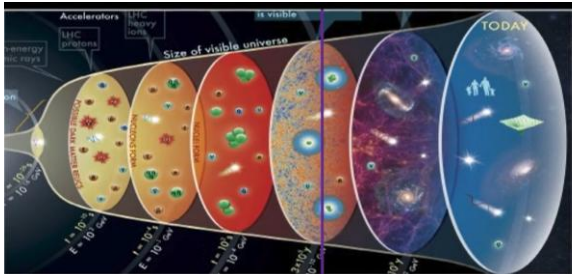
姜 杰

相关学科

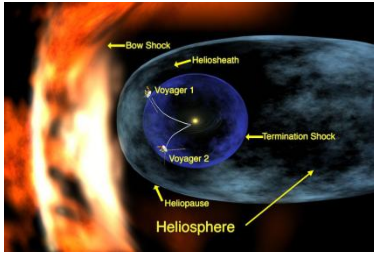
天文学 → 天体物理







太阳物理
(Solar physics)
≈ 日球物理
(Heliophysics)



日球层物理
(Heliospheric Physics)

其它恒星系统和系外行星的宜居性

空间物理
(space physics)

担任职务1

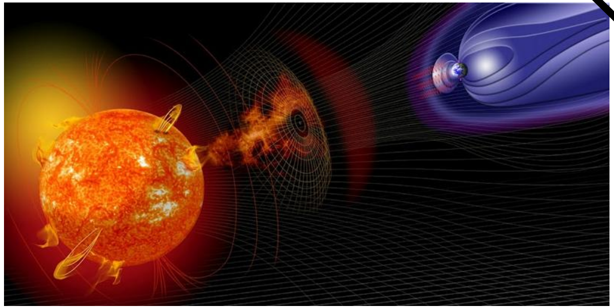
担任职务2

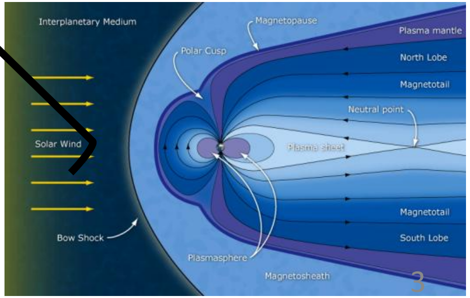
担任职务3

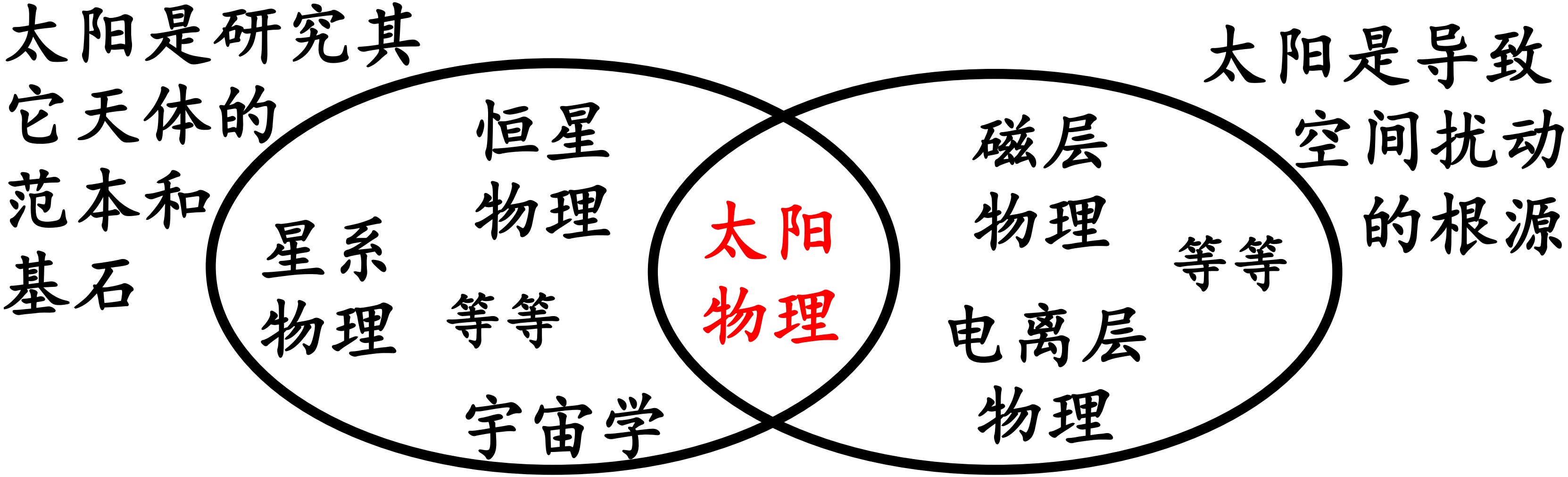
日地物理
(Solar-Terrestrial Physics)

担任职务4 担任职务5

空间天气
(space weather)



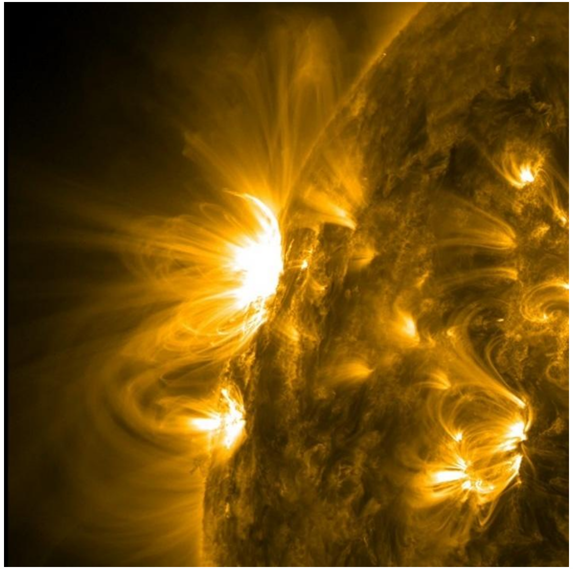


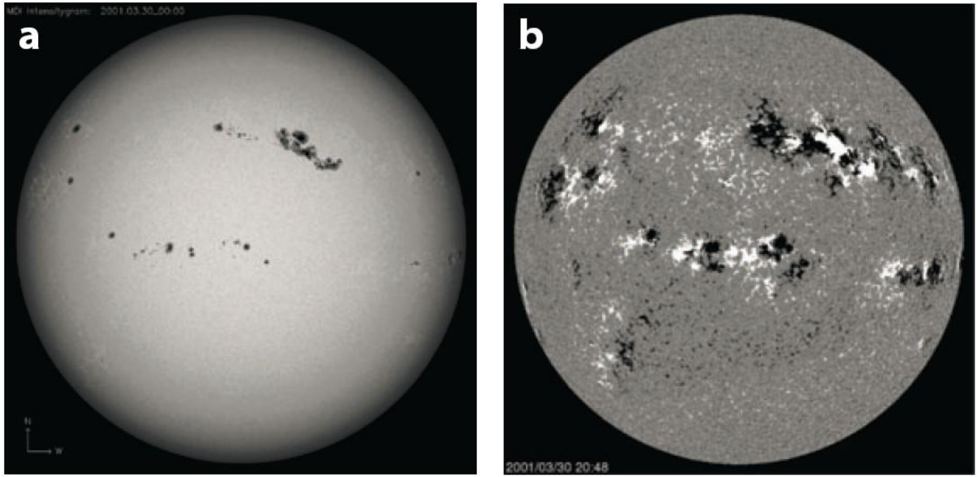


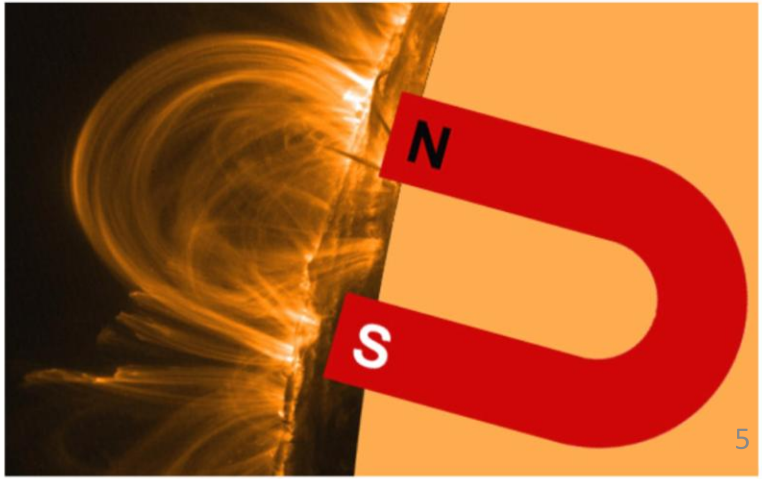
- **学科划分不是数学或物理定律，没有严格界限**
- **塑造宇宙结构的关键：引力 vs 电磁相互作用力**

所有空间天气现象的根源

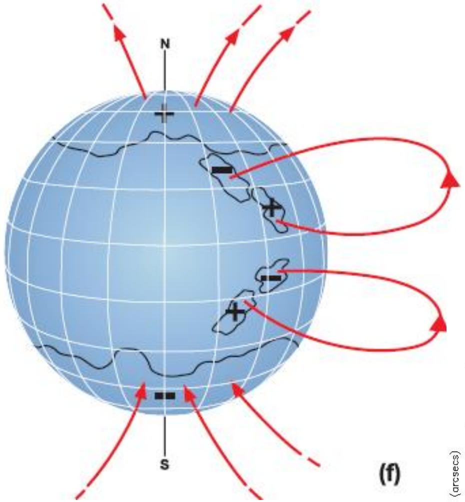
— 太阳磁场

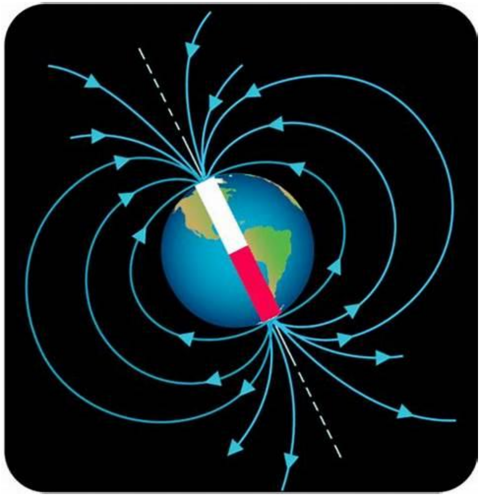


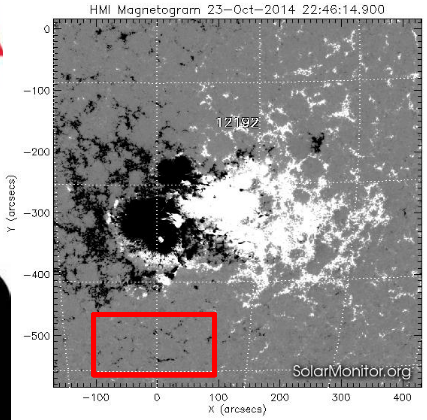


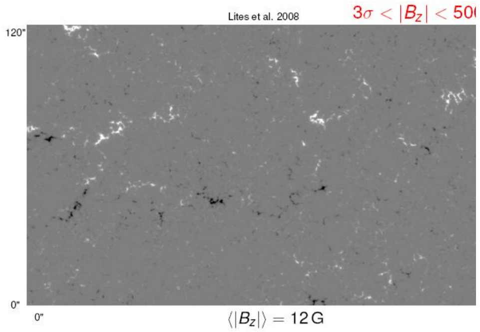


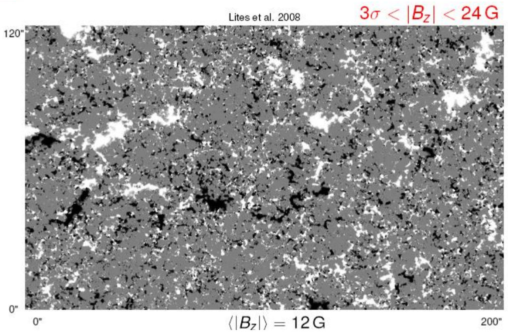
磁场空间尺度：跨越~6个量级



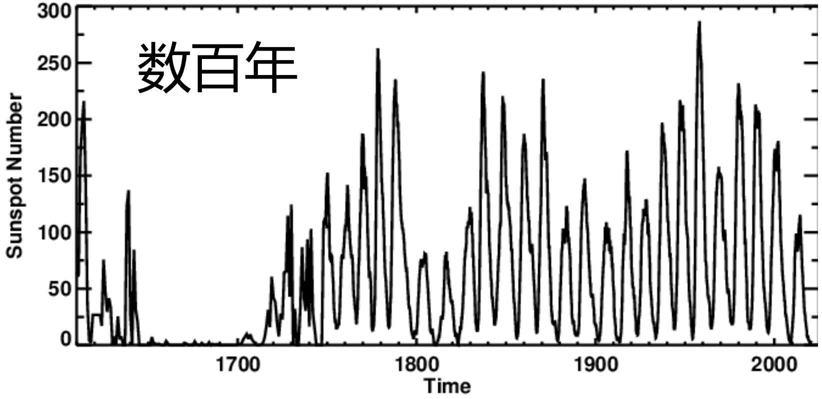




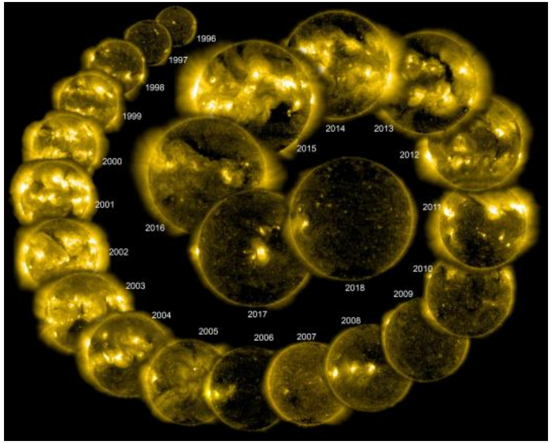




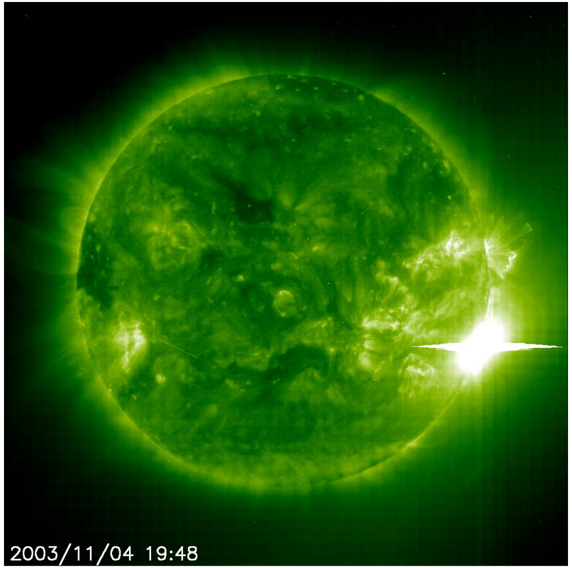
磁场变化时间尺度的跨度



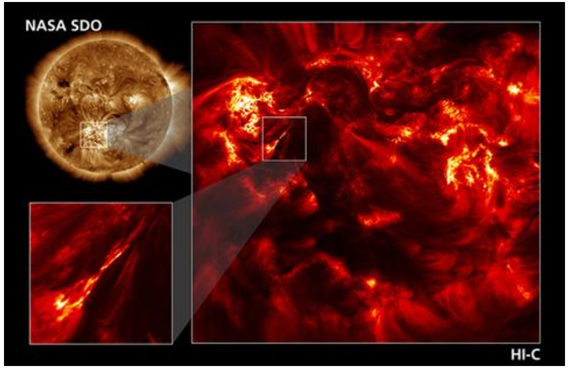
数百年



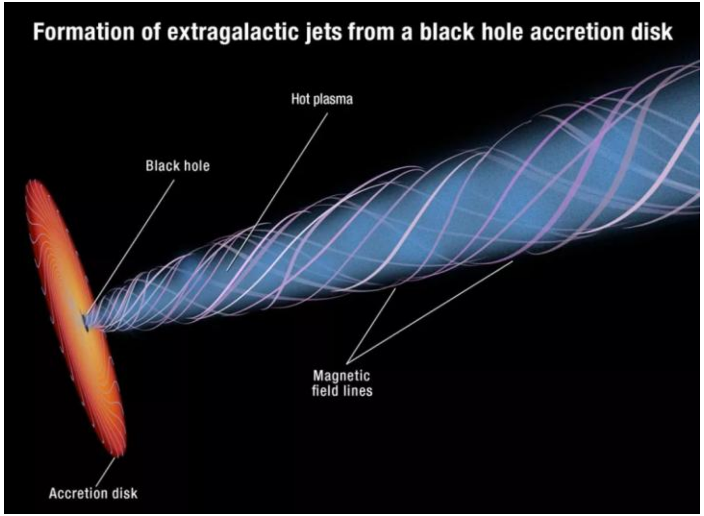
数年

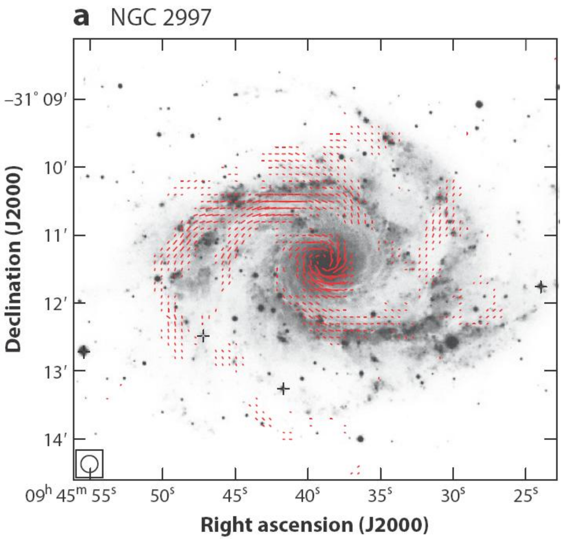


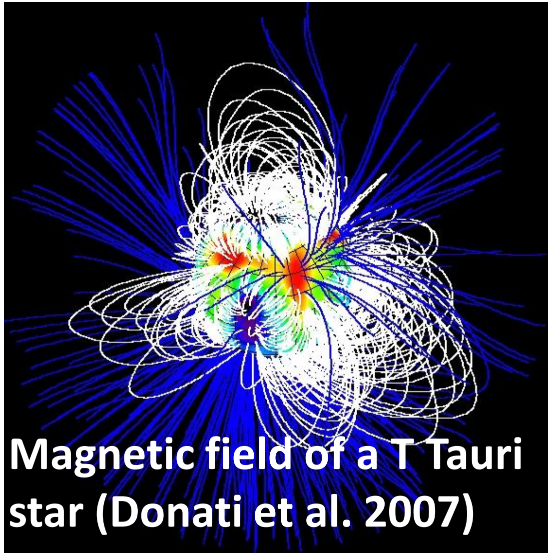
数分钟

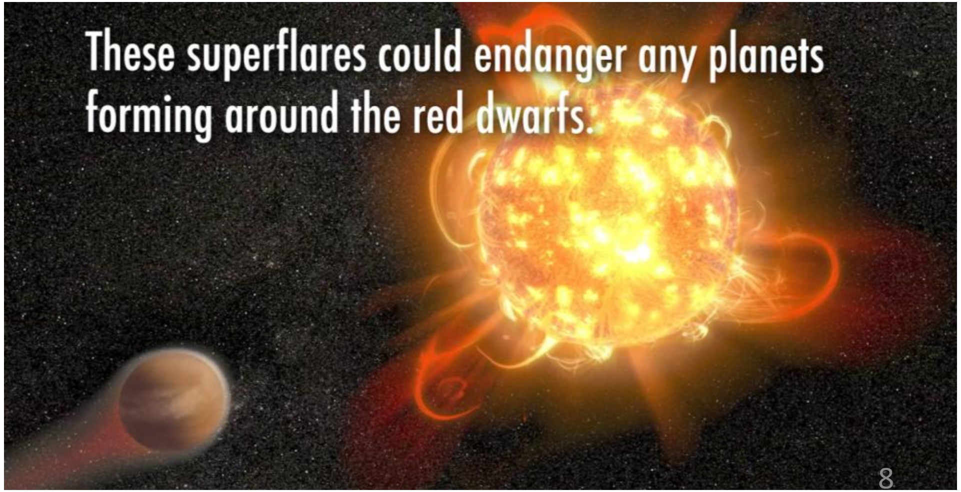


数秒钟

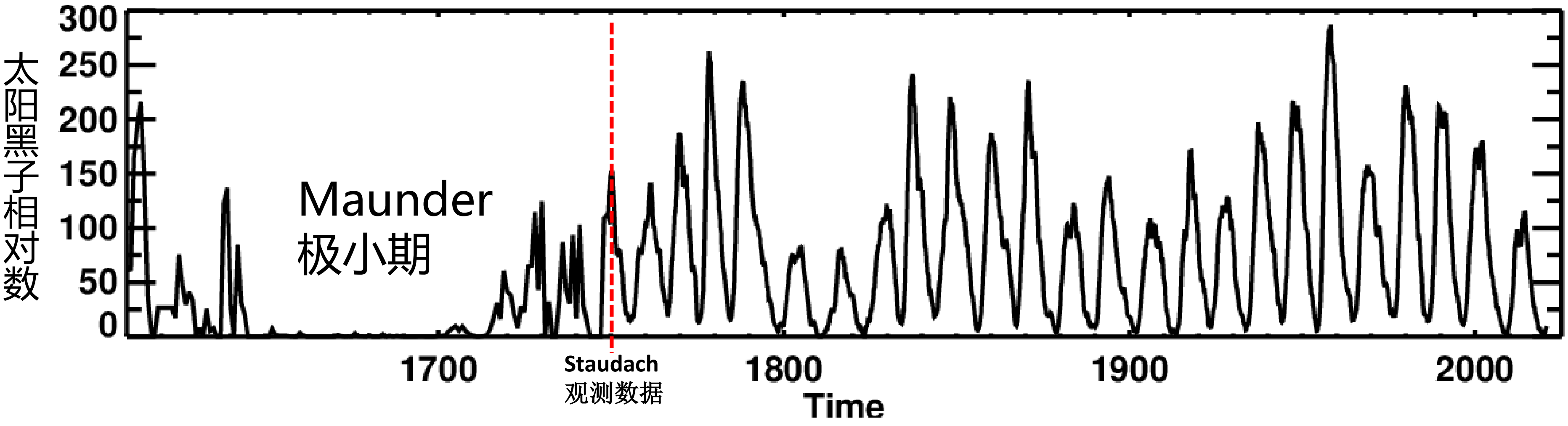

Formation of extragalactic jets from a black hole accretion disk
Hot plasma
Black hole
Magnetic field lines
Accretion disk

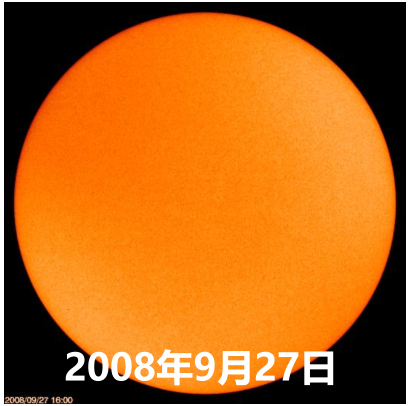

a NGC 2997
Declination (J2000)
−31° 09′
10′
11′
12′
13′
14′
09h 45m 55s
50s
45s
40s
35s
30s
25s
Right ascension (J2000)

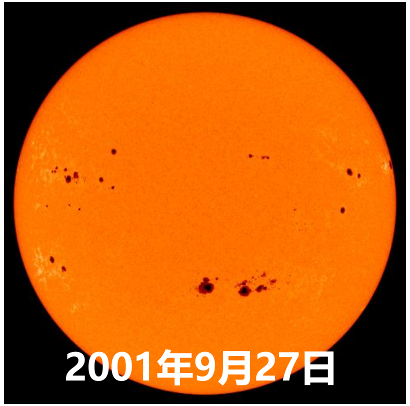

Magnetic field of a T Tauri star (Donati et al. 2007)


These superflares could endanger any planets forming around the red dwarfs.

课题组研究方向







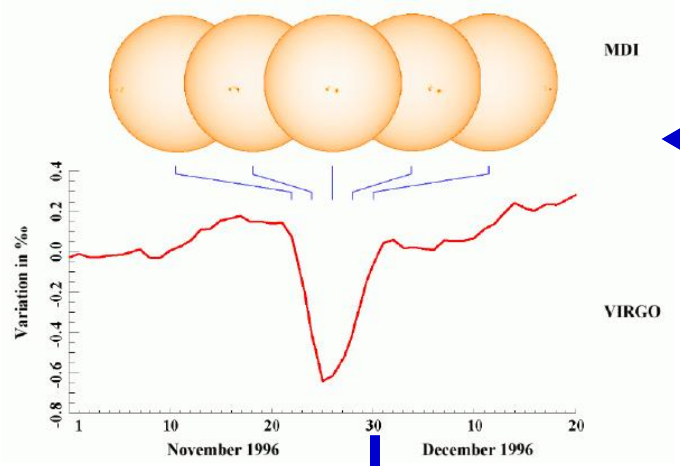
太阳周的产生机理（即发电机）、演化和影响

关键科学问题：

- **太阳周关键物理机制/标准模型**
- **调制太阳周的非线性和随机性机制**
- **太阳周的物理预报模型**

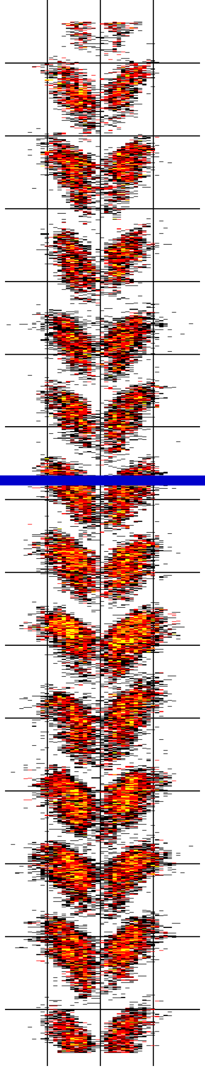
目前主要研究方向

太阳的长周期演化

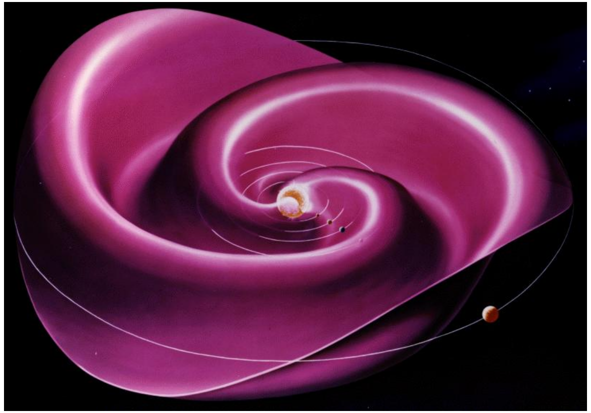


全球气候

以理解和预报太阳磁周期为主线

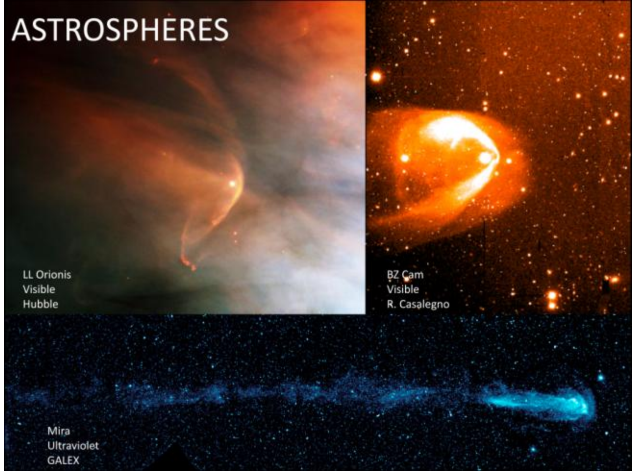


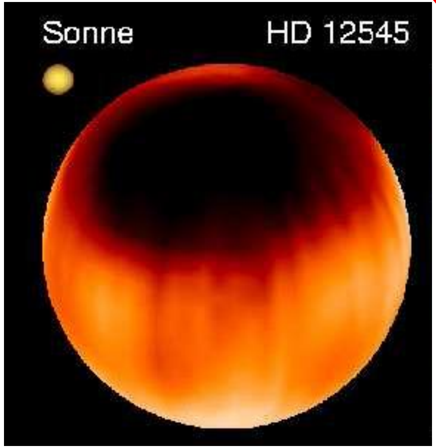
日球层磁场的演化

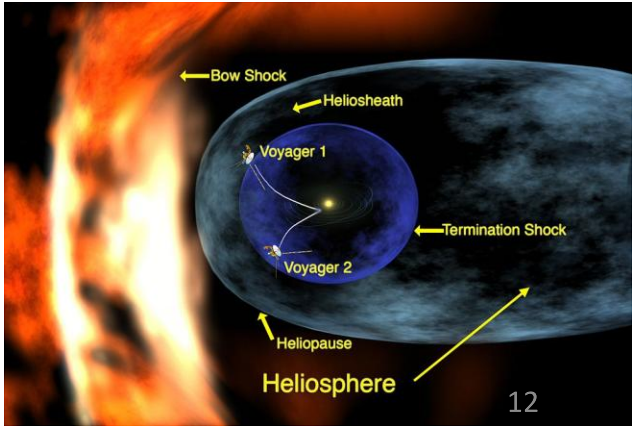


日球层物理


太阳内部物理
日球层磁场
太阳磁周期
恒星磁周期
恒星结构和演化


ASTROSPHERES
LL Orionis
Visible
Hubble
BZ Cam
Visible
R. Casalegno
Mira
Ultraviolet
GALEX


Sonne
HD 12545


Bow Shock
Heliosheath
Voyager 1
Termination Shock
Voyager 2
Heliopause
Heliosphere

研究方向的意义和重要性

What drives the solar magnetic cycle?
Scientists believe differing rates of rotation from place to place on the sun underlie its 22-year sunspot cycle. They just can't make it work in their simula-tions. Either a detail is askew, or it's back to the drawing board

Can we develop a general theory of the dynamics of turbulent flows and the motion of gran-ular materials?

Will mathematicians unleash the power of the Navier-Stokes equations?

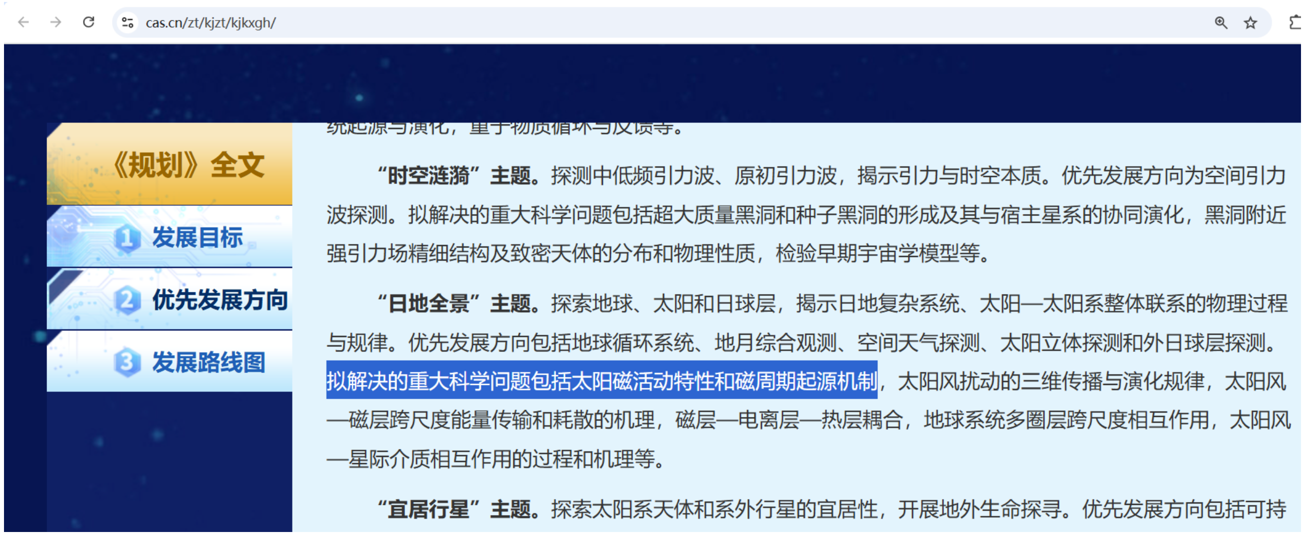
What causes ice ages?

What causes reversals in Earth's magnetic field?

- 美国科学院《太阳和空间物理》十年战略规划：“理解太阳磁场是如何产生的，即发电机问题，是(太阳和日球层物理)的关键挑战”（第55页）

研究方向的意义和重要性

➢ 该研究的方向是**国家空间科学**中长期发展规划(2024--2050年)明确提出的“优先发展方向”和“拟解决的重大科学问题”



cas.cn/zt/kjzt/kjxgh/

《规划》全文

1 发展目标

2 优先发展方向

3 发展路线图

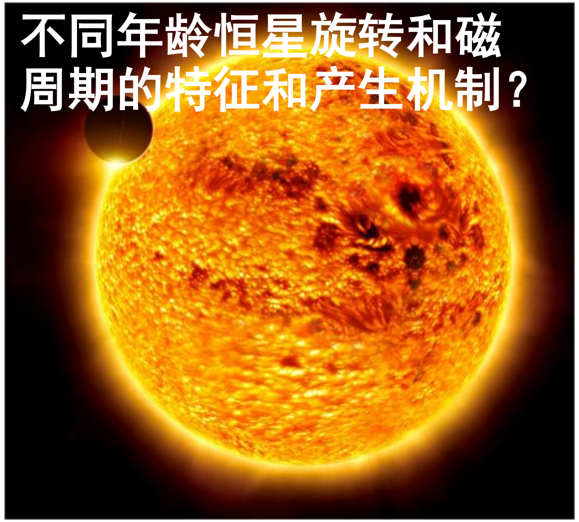
“时空涟漪”主题。探测中低频引力波、原初引力波，揭示引力与时空本质。优先发展方向为空间引力波探测。拟解决的重大科学问题包括超大质量黑洞和种子黑洞的形成及其与宿主星系的协同演化，黑洞附近强引力场精细结构及致密天体的分布和物理性质，检验早期宇宙学模型等。

“日地全景”主题。探索地球、太阳和日球层，揭示日地复杂系统、太阳—太阳系整体联系的物理过程与规律。优先发展方向包括地球循环系统、地月综合观测、空间天气探测、太阳立体探测和外日球层探测。拟解决的重大科学问题包括太阳磁活动特性和磁周期起源机制，太阳风扰动的三维传播与演化规律，太阳风—磁层跨尺度能量传输和耗散的机理，磁层—电离层—热层耦合，地球系统多圈层跨尺度相互作用，太阳风—星际介质相互作用的过程和机理等。

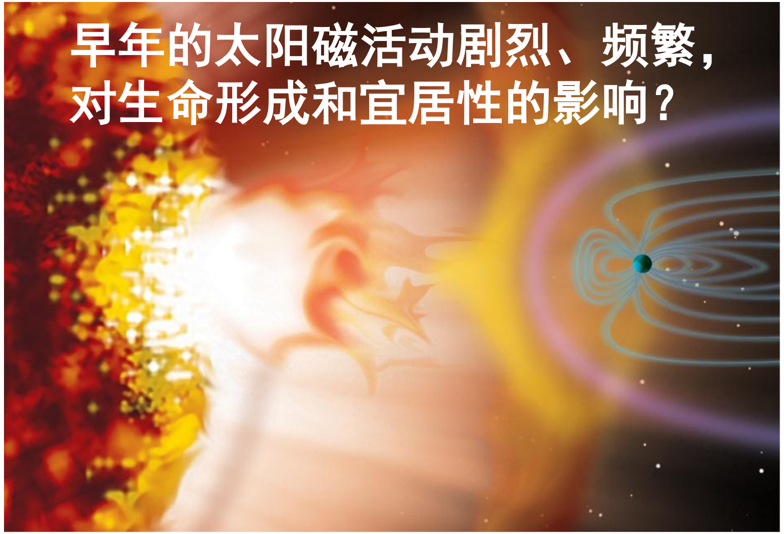
“宜居行星”主题。探索太阳系天体和系外行星的宜居性，开展地外生命探寻。优先发展方向包括可持

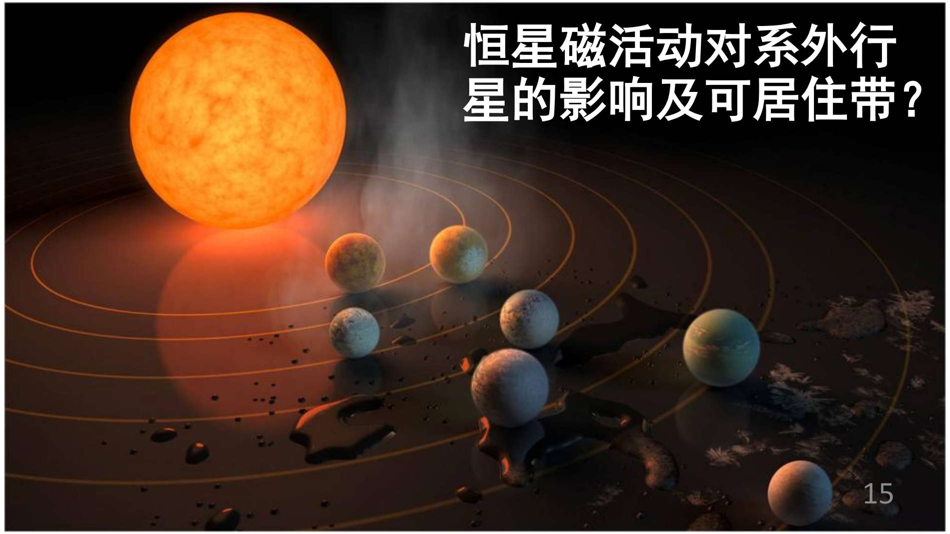
➢ 《国家自然科学基金“十三五”、“十四五”发展规划》优先发展领域中明确指出的发展方向

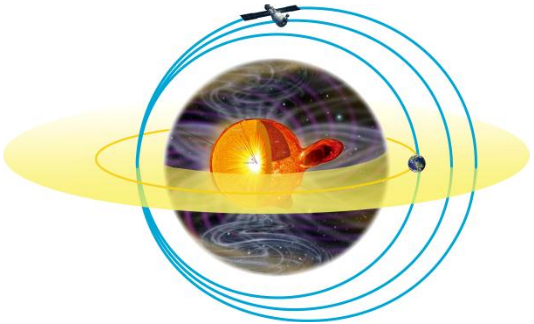
研究方向的意义和重要性



➢ 太阳磁周期的认识可应用于其它恒星，不同恒星所具备的不同物理参数下的特征也可用来检验和促进我们对太阳周的理解







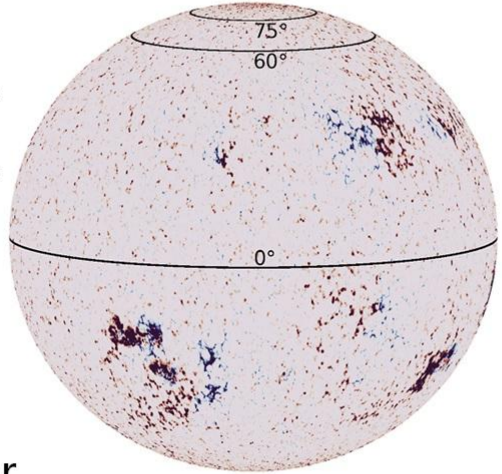
已经工程立项的中国太阳极轨探测卫星

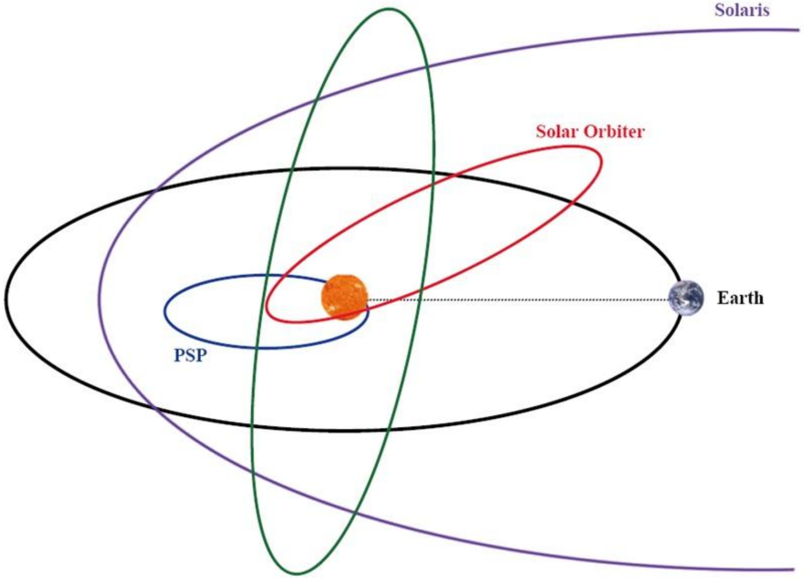
太阳极轨探测科学目标及预期成果

揭示两个起源、认知一个过程

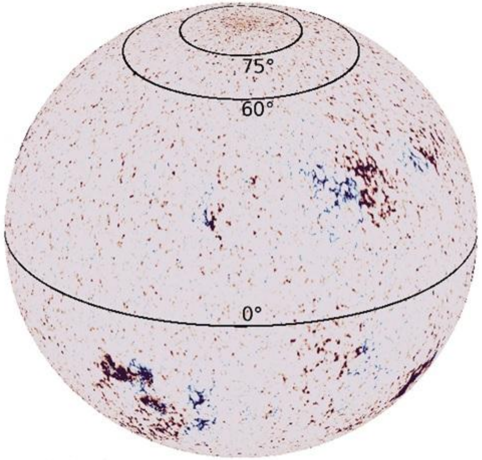
- 通过**高轨道倾角**（≥78度）、**小椭圆偏心率**的太阳极轨飞行器，在**人类历史上首次对太阳极区进行正面成像观测**
- 以太阳极区磁场、流场的高精度测量为主要特色，通过多波段遥感和原位探测：
  - □ **揭示决定人类生存环境的太阳磁活动周的起源**（125个科学难题之一）
  - □ **揭示联系太阳和太阳系天体的高速太阳风的起源**
  - □ **认知目前所知唯一宜居恒星系统的空间天气过程**

黄道面处的观测视角

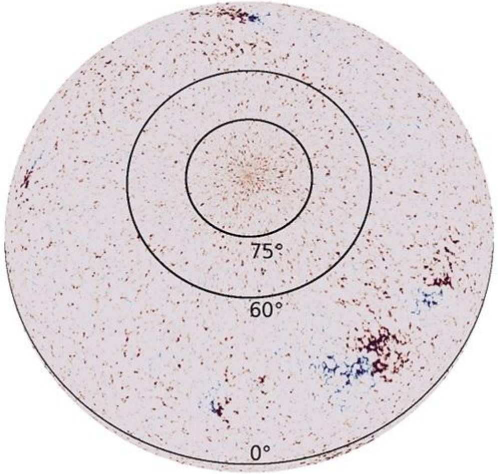


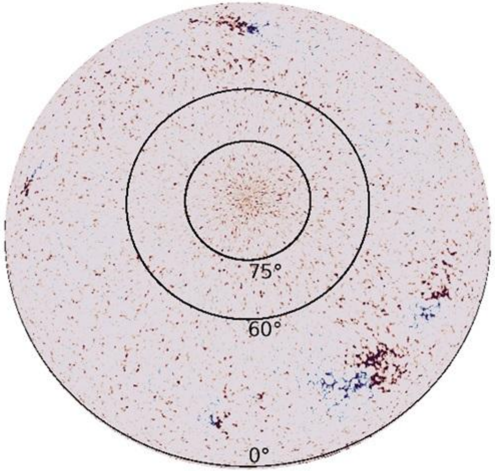


Solar orbiter的观测视角

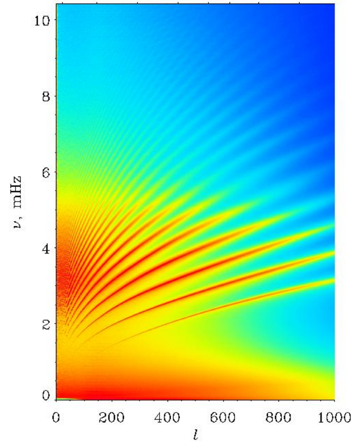


Solaris的观测视角

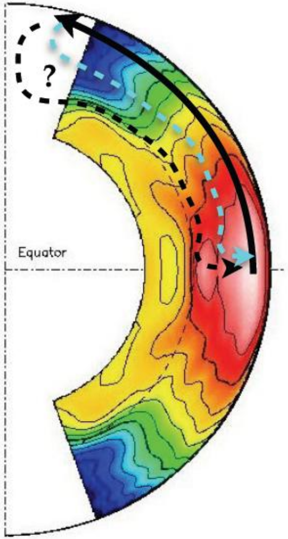


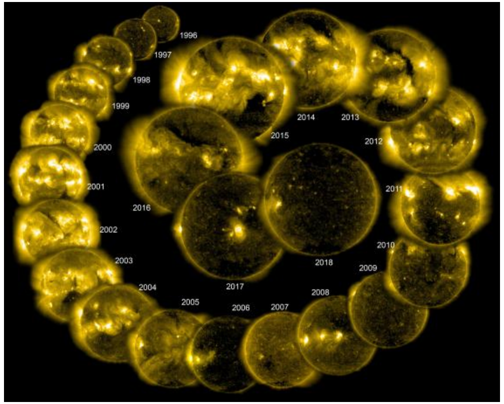


中国极轨探测器的观测视角



所有磁现象都是内部发电机行为的结果





内部声波

日震

(湍动)对流

旋转Ω

大尺度速度场

子午环流
$v_p(r,\theta)$

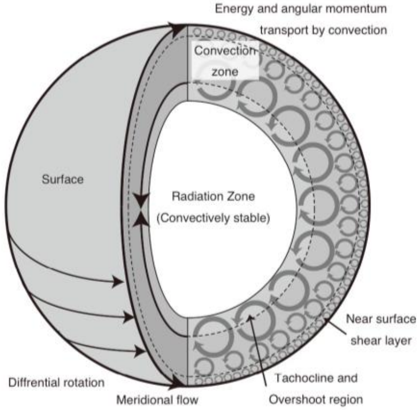
较差旋转
$\Omega(r,\theta)$

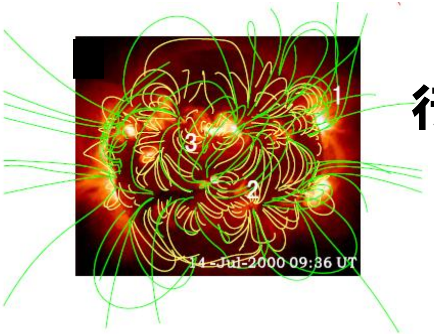
(湍动)对流

$B(r, \theta, \varphi, t)$ → 磁活动和日球层

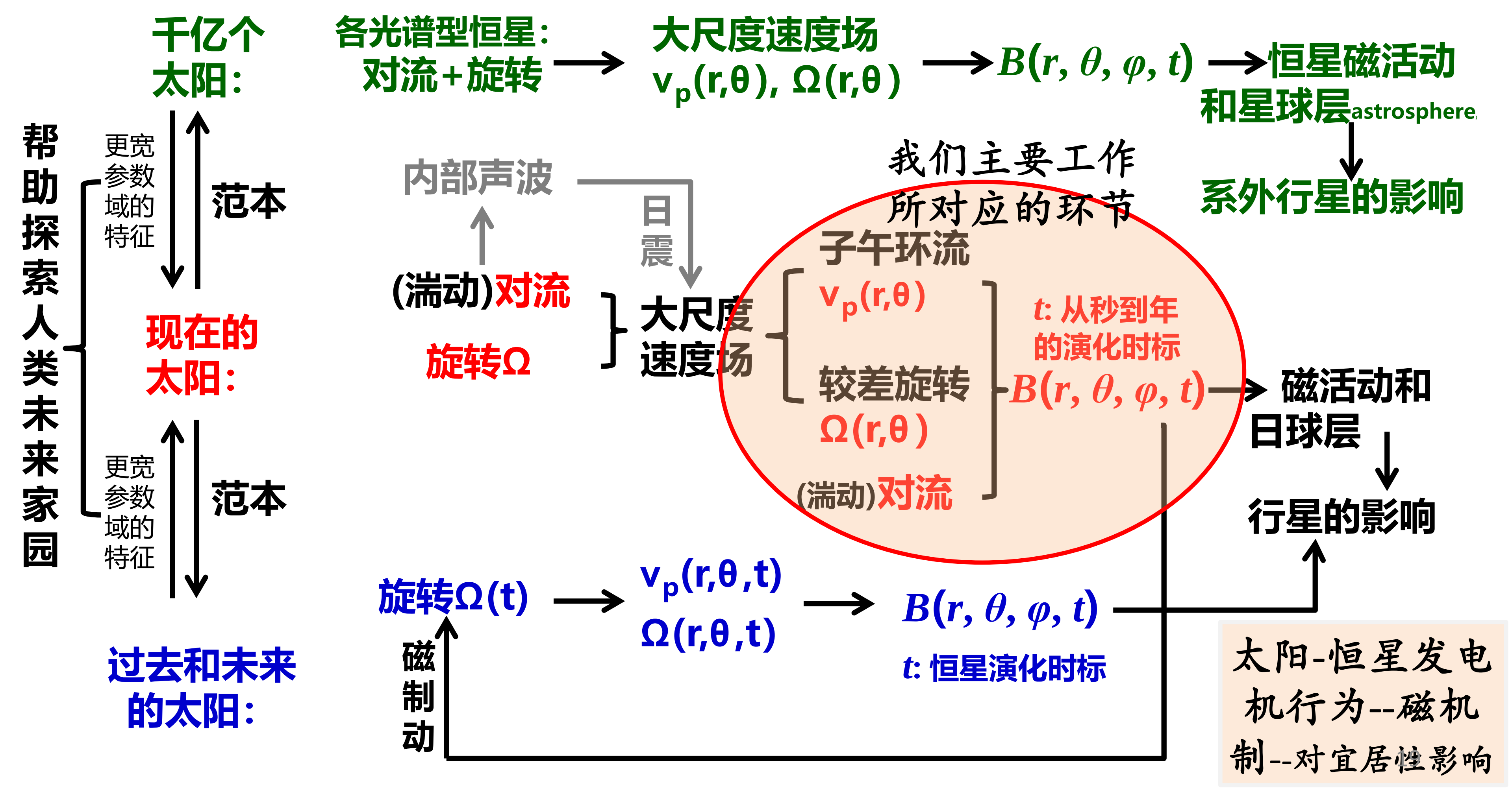
↓

行星的影响



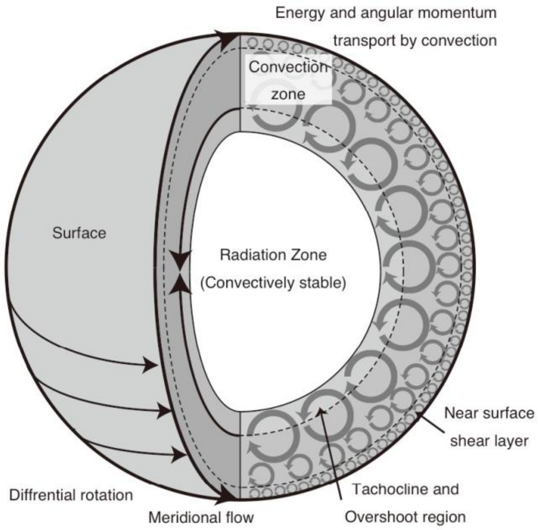


Zhang et al. (2007)



千亿个太阳:
各光谱型恒星：对流+旋转
大尺度速度场 $v_p(r,\theta)$, $\Omega(r,\theta)$
$B(r, \theta, \varphi, t)$
恒星磁活动和星球层astrosphere
系外行星的影响
帮助探索人类未来家园
更宽参数域的特征
范本
内部声波
日震
(湍动)对流
旋转Ω
大尺度速度场
我们主要工作所对应的环节
子午环流
$v_p(r,\theta)$
较差旋转
$\Omega(r,\theta)$
(湍动)对流
t: 从秒到年的演化时标
$B(r, \theta, \varphi, t)$
磁活动和日球层
行星的影响
现在的太阳:
更宽参数域的特征
范本
过去和未来的太阳:
旋转Ω(t)
$v_p(r,\theta,t)$
$\Omega(r,\theta,t)$
$B(r, \theta, \varphi, t)$
t: 恒星演化时标
磁制动
太阳-恒星发电机行为--磁机制--对宜居性影响

（太阳）发电机的基本原理



➢ 发电机←→等离子体中速度场和磁场的非线性相互作用←→磁流体力学(MHD)方程组：

磁感应方程：
$$\frac{\partial \mathbf{B}}{\partial t} = \nabla \times (\mathbf{u} \times \mathbf{B} - \eta \nabla \times \mathbf{B})$$

Navier–Stokes方程：
$$\frac{\mathrm{D}\boldsymbol{u}}{\mathrm{D}t} = -\frac{1}{\varrho}\nabla p - 2\boldsymbol{\Omega} \times \boldsymbol{u} + \boldsymbol{g} + \frac{1}{\mu_0 \varrho}(\nabla \times \boldsymbol{B}) \times \boldsymbol{B} + \frac{1}{\varrho}\nabla \cdot \boldsymbol{\tau}$$

+连续性方程+能量方程

理解太阳周（产生机制、演化、预报）的方法

- 3D全球对流层的MHD数值模拟
- 日震学
- 太阳-恒星联系
- 长期历史观测数据约束内部物理
- 运动学方法

国际同行引用和评价举例

THE ASTROPHYSICAL JOURNAL, 804:68 (12pp), 2015 May 1 doi:10.1088/0004-637X/804/1

THE MINIMUM OF SOLAR CYCLE 23: AS DEEP AS IT COULD BE?

ANDRÉS MUÑOZ-JARAMILLO[1,2,3], RYAN R. SENKPEIL[4], DANA W. LONGCOPE[1], ANDREY G. TLATOV[5], ALEXEI A. PEVTSOV[6], LAURA A. BALMACEDA[7,8], EDWARD E. DELUCA[9], AND PETRUS C. H. MARTENS[10]
[1] Department of Physics, Montana State University, Bozeman, MT 59717, USA; munoz@solar.physics.montana.edu
[2] Space Sciences Laboratory, University of California, Berkeley, CA 94720, USA
[3] W.W. Hansen Experimental Physics Laboratory, Stanford University, Stanford, CA 94305, USA

This type of time binning is very powerful for characterizing the general properties of the solar cycle. An excellent example of this kind of work was performed by Jiang et al. (2011), who performed a very detailed quantitative characterization of the relationship between cycle amplitude, cycle phase, and the properties of active latitudes (i.e., the shape, location, and width of the wings in the butterfly diagram). Taking advantage of this characterization, they laid a solid foundation for the construction of synthetic data sets based solely on sunspot number, which can be used to drive surface flux transport simulations

美国多家顶尖学术机构的多名著名学者合作的文章Munoz-Jaramillo et al.(2015)对姜等(2011)的引用和评价：

"姜等(2011)给出了特征化太阳周总体特点**非常强有力工具**的一个**极好的例子**，他们做了**非常详细的定量化研究**……，这为单独基于黑子数重构合成的数据序列**奠定了坚实的基础**"

国际同行引用和评价举例

- Karak (2020, ApJL)：在我们文章发表后，立即跟进证明我们的思想，如在其总结中所述“**我们证明了姜(2020)**所提出的纬度淬火……”。全文8处引用我们的工作。

The Astrophysical Journal Letters, 901:L35 (6pp), 2020 October 1 https://doi.org/10.3847/2041-8213/abb93f

CrossMark

Dynamo Saturation through the Latitudinal Variation of Bipolar Magnetic Regions in the Sun

Bidya Binay Karak
Department of Physics, Indian Institute of Technology (Banaras Hindu University), Varanasi, India; karak.phy@iitbhu.ac.in

Karak

3. Summary and Conclusions

We have demonstrated the saturation of the magnetic field in the kinematic Babcock–Leighton type flux transport dynamo models through the latitudinal quenching as proposed by Jiang (2020). It is based on the observed fact that the stronger cycles

欧洲学者Talafha et al. (2022, A&A)：在引言中专开一长段介绍姜(2020)

Jiang (2020) recently called attention to another nonlinear modulation mechanism: latitude quenching (LQ). This is based on the emprirical finding based on an analysis of a long suns… ctive regi… orre- late… ower frac… cross the … polar fields. Therefore, the correlation found here represents a negative feedback effect. Assuming a linear dependence for both the mean tilt and the mean latitude on cycle amplitude, based on one particular SFT setup, Jiang (2020) found that TQ and LQ yield comparable contributions to the overall nonlinearity in the process of the regeneration of the poloidal field from the poloidal source. The net result showed that the net dipole moment change during a cycle tends to be saturated for stronger cycles.

Our objective in the present work is to further explore the respective roles played by TQ and LQ in the solar dynamo. In

“姜(2020)注意到另一种非线性调节机制LQ……姜(2020)发现….。我们的目标是要进一步探索……”

国际同行引用和评价举例

Solar Phys (2020) 295:119
https://doi.org/10.1007/s11207-020-016

EDITORS' CHOICE

In the SFT model, the dipole "amplification factor" for a BMR – in other words, the ratio $b_{1,0}^{Bf}/b_{1,0}^{Bi}$ – is known to be a Gaussian function of emergence latitude. This was first noted by Jiang, Cameron, and Schüssler (2014) and explained mathematically by Petrovay, Nagy,

How Good Is the Bipolar Approximation of Active Regions for Surface Flux Transport?

Anthony R. Yeates[1]

英国学者Yeates (2020, Sol. Phy.)：
"**姜等(2014)首次指出**，在SFT模型中，黑子群的双极放大因子是纬度的高斯函数"

THE ASTROPHYSICAL JOURNAL, 847:69 (17pp), 2017 September 20 https://doi.org
© 2017. The American Astronomical Society. All rights reserved.

Solar Cycle Variability Induced by Tilt Angle Scatter in a Babcock–L Dynamo Model

Bidya Binay Karak and Mark Miesch
High Altitude Observatory, National Center for Atmospheric Research, 3080 Center Green Dr., Boulder, CO 80301, USA

since the work of Charbonneau & Dikpati (2000). Recently, Cameron et al. (2013) demonstrated this idea using observations, while Jiang et al. (2014) for the first time quantified the effect of the tilt scatter on the polar field using an SFT model. Based on this idea, many authors (e.g., Yeates et al. 2008; Choudhuri & Karak 2009; Olemskoy & Kitchatinov 2013) modeled irregular features of the solar cycle by including fluctuations in the BL α term of their 2D flux transport dynamo models.

美国学者Karak & Miesch (2017, ApJ)：
"**姜等(2014)第一个定量描述**倾斜角随机性对极区磁场的影响，基于这一思想，许多作者…，模拟了太阳周的不规则性"

国际同行引用和评价举例

The Astrophysical Journal, 863:116 (11pp), 2018 August 20 https://doi.org/10.3847/1538-4357/aad17e

How Many Active Regions Are Necessary to Predict the Solar Dipole Moment?

T. Whitbread[1], A. R. Yeates[1], and A. Muñoz-Jaramillo[2,3,4]
[1] Department of Mathematical Sciences, Durham University, Durham, DH1 3LE, UK; tim.j.whitbread@durham.ac.uk
[2] Southwest Research Institute, 1050 Walnut Street, #300, Boulder, CO 80302, USA
[3] National Solar Observatory, 3665 Discovery Drive, Boulder, CO 80303, USA
[4] High Altitude Observatory, National Center for Atmospheric Research, 3080 Center Green, Boulder, CO 80301, USA

overall axial dipole moment. These low-latitude regions could indeed be the cause of the weak polar field at the end of Cycle 23, hence the low amplitude of Cycle 24, as suggested by Jiang et al. (2015).

英国学者Whitbread et al.(2018, ApJ)一文目的是**检验姜等(2015)论文的思想**，最终给出结论：“**正如姜等(2015)所建议的**，低纬度的那些活动区可能真正是造成23周极小年弱极区磁场，进而24周低幅度的原因”

Petrovay (2020, Living Review in Solar Physics)：”在产生第23周极小期极区磁场方面，**最初的努力都遇到了困难，直到姜等(2015)**通过包括每个观测的活动区，**最终得以正确地再现极区磁场的演化。**”

Beside the general investigations discussed, a special objective of SFT modelling efforts was to correctly “hindcast” the unusually weak polar fields in the minimum of Cycle 24 that brought the Modern Maximum to an end. Initial efforts (Yeates 2014; Upton and Hathaway 2014a) encountered difficulties in reproducing the polar field, until Jiang et al. (2015) were finally able to correctly reproduce the evolution of the polar field by incorporating in their source term individual observed active regions (modelled as idealized bipoles, but with tilt values, fluxes and separations derived from observations). After carefully excluding recurrent ARs from the source term they found that the chief responsibility for the deviation of the polar flux from its expected value lies with a low number of large low-latitude rogue AR with non-Hale or non-Joy orientations.

国际同行引用和评价举例

MNRAS **531,** 1546–1553 (2024)
Advance Access publication 2024 May 7
https://doi.org/10.1093/mnras/stae1

Algebraic quantification of the contribution of active regions to the Sun's dipole moment: applications to century-scale polar field estimates and solar cycle forecasting

Shaonwita Pal[1,2★] and Dibyendu Nandy[1,3★]
[1]*Center of Excellence in Space Sciences India, Indian Institute of Science Education and Research Kolkata, Mohanpur 741246, West Bengal, India*
[2]*Department of Technical Education, Training and Skill Development, Government of West Bengal, Newtown Rajarhat 700160, West Bengal, India*
[3]*Department of Physical Sciences, Indian Institute of Science Education and Research Kolkata, Mohanpur 741246, West Bengal, India*

sometimes becomes challenging and time-consuming. What if we explore an alternative to numerical methods, moving away from complex computer-intensive modelling and adopting a simplified approach?

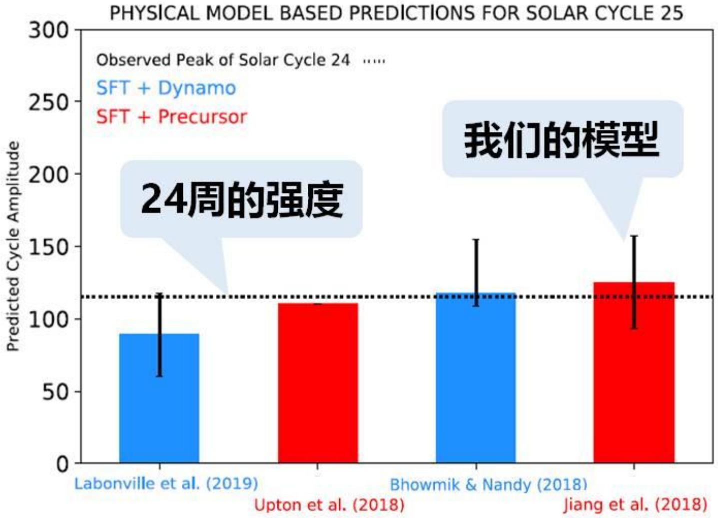
The first attempt in this direction was made by Jiang et al. (2019) and Petrovay, Nagy & Yeates (2020). They introduced a mathematical framework aimed at calculating the distinct contributions of each emerging active region that collectively generate the ultimate global DM during the cycle minimum. In their work, synthetic active region data was utilized to compute the ultimate DM, and the results were compared with those derived from the 2 × 2D dynamo model

Pal & Nandy (2024, MNRAS)明确指出“姜等(2019)**首次在发展**快捷计算黑子群对极区磁场影响的**方法方面做出努力**

国际同行引用和评价举例

- **Jiang et al. (2018)、Jiang & Cao (2018)作为国际上物理预报太阳周的代表模型被广泛引用**

Nandy (2021, Solar physics, review)



THE ASTROPHYSICAL JOURNAL, 890:36 (15pp), 2020 F

NASA Ames研究中心研究员

Application of Synoptic Magnetograms to Global Solar Activity Forecast

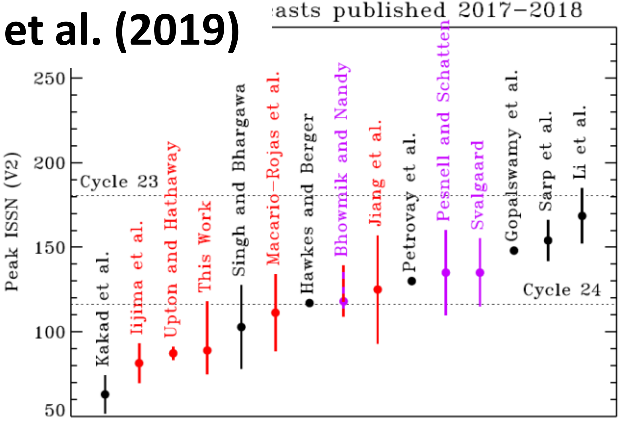
I. N. Kitiashvili
NASA Ames Research Center, Moffett Field, Mountain View, CA 94035, USA; irina.n.kitiashvili@nasa.gov
Bay Area Research Environmental Institute, Moffett Field, Mountain View, CA 94035, USA

The application of a Monte-Carlo technique to incorporate SOLIS/NSO and HMI/*SDO* synoptic magnetograms in a flux-transport model assuming the Babcock–Leighton dynamo mechanism (Babcock 1961; Leighton 1969) in a flux-transport model demonstrated good agreement of the predicted poloidal field for up to one year (Jiang & Cao 2018). In this research, the flux-transport model was driven by available magnetograms to obtain 50 realization of the future states. They predicted that SC25 will be about 10% stronger (sunspot number ∼125) than SC24 with probability of 95% (Jiang et al. 2018).

"姜和曹(2018)提前一年预报的极区磁场与观测吻合得很好"

Labonville et al. (2019)

Figure 4 A sample of recently published forecast for the peak ISSN amplitude (13-month smoothed monthly ISSN) for Cycle 25. The *horizontal dotted lines* indicate the peak smoothed ISSN values for Cycles 23 and 24, as labeled. Predictions in *red* are made using surface flux transport and/or dynamo models; predictions in *purple* are made using dynamo-based precursor methods. Forecasts in *black* collect other techniques.



国际同行引用和评价举例 – 学生的工作

Space Science Reviews (2023) 219:60
https://doi.org/10.1007/s11214-023-01004-7

影响因子：10.3 (2022)

Observationally Guided Models for the Solar Dynamo and the Role of the Surface Field

Robert H. Cameron[1] · Manfred Schüssler[1]

Hale奖(国际太阳物理领域最高荣誉)获得者

FTD/BL models mostly rely on radial differential rotation in the tachocline and often also assume penetration of the meridional flow into the stably stratified interior in order to "store" the toroidal magnetic flux at the bottom of the convection zone (e.g., Nandy and Choudhuri, 2002). In contrast, the 2D model of Zhang and Jiang (2022) exhibits no such penetration, but c… sistently includes the helioseismically determined differential rotation in th… convection zone (including the near-surface shear layer), a one-cell meridional circulation, radial pumping keeping the surface field vertical and inhibiting diffusive loss of the toroidal field, and a BL source term. The generation of toroidal flux turns out to be strongly dominated by the latitudinal differential rotation in the bulk of the convection zone (see also Guerrero and de Gouveia Dal Pino, 2007; Muñoz-Jaramillo et al, 2009). The latitudinal propagation of the toroidal flux belts in the model of Zhang and Jiang (2022) is provided by a combination of flux transport by the equatorward meridional return flow and the latitude dependence of the latitudinal rotational shear generating toroidal magnetic flux, the latter as already envisaged by Babcock (1961). Test cases

全文共10处引用我们的工作，并用一段介绍我们新建立的模型，对比与以前模型的不同

张泽斌，已毕博士

国际同行引用和评价举例 – 学生的工作

Article

Harmonizing Sunspot Datasets Consistency: Focusing on SOHO/MDI and SDO/HMI Data

Barbara Góra-Gálik [1], Emese Forgács-Dajka [1,2,*] and Istvan Ballai [3]

of homogeneous and well-calibrated datasets. More recently, Luo et al. (2023) [14] calibrated and analyzed the magnetic power spectra of SOHO/MDI and SDO/HMI synoptic maps using spherical harmonic decomposition. Their analysis identified the supergranular scale used and led to valuable insights for future studies on the solar cycle dependence of magnetic power spectra.

Other research efforts by Wang et al. (2023) and Wang et al. (2024) [15,16] aimed to construct a live, homogeneous AR database from SOHO/MDI and SDO/HMI synoptic magnetograms. Their work highlighted the need for consistent long-term datasets to gain deeper insights into solar activity, study cycle-phase dependencies, and improve solar activity forecasting. In their first study, the authors presented a method for automated AR detection and the calibration of MDI and HMI synoptic magnetograms and identified a calibration factor of 1.36 (with MDI producing higher flux values), which is consistent with the earlier results

罗昱琨，
在读博士生

王瑞慧
在读博士生

国际同行引用和评价举例 – 学生的工作

The Astrophysical Journal, 986:183 (10pp), 2025 June 20
https://doi.org/10.3847/1538-4357/add692

CrossMark

The Spectra of Solar Magnetic Energy and Helicity

G. Kishore[1] and Nishant K. Singh
Inter-University Centre for Astronomy & Astrophysics, Post Bag 4, Ganeshkhind, Pune 411 007, India; kishoreg@iucaa.in, nishant@iucaa.in
Received 2025 March 5; revised 2025 April 14; accepted 2025 April 30; published 2025 June 17

are expected to affect the energy and helicity spectra. Further, comparing synoptic magnetograms from HMI and MDI, Y. Luo et al. (2023) have found that the energy spectra can only be matched by applying a scale-dependent correction factor. Due to the theoretical importance of the sign of the

polar fields. On the other hand, there are also more complicated approaches that involve using an extrapolation scheme to fill in the data at high latitudes (e.g., Y. Luo et al. 2023, p. 2), which we do not explore here.

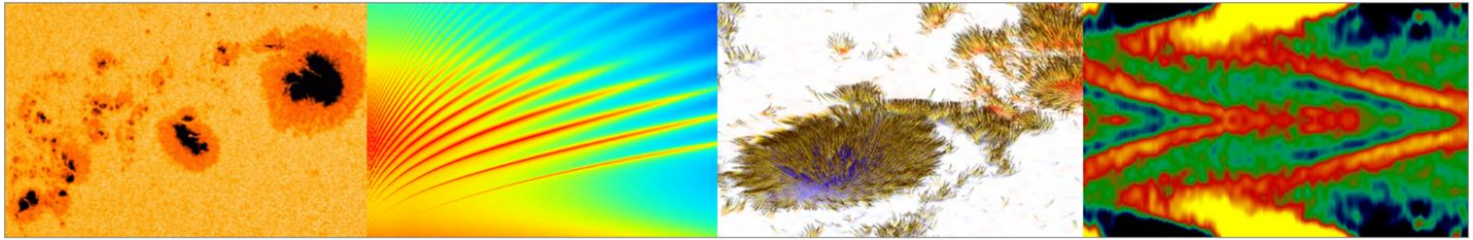
Vector magnetograms are considered unreliable at high latitudes (e.g., A. Brandenburg et al. 2017, p. 5; Y. Luo et al. 2023, p. 2) and in regions where the magnetic field is weak.

罗昱琨，
在读博士生

国际同行引用和评价举例 – 学生的工作

⚠ 不安全 hmi.stanford.edu/hmnuggets/?p=4313

HMI Science Nuggets



博士生罗昱琨的工作被NASA/SDO卫星HMI载荷的科学精粹(Science Nuggets)收录

HOME FOR AUTHORS FOR READERS

206. Magnetic power spectra of the Sun and cycle dependence of magnetic network

Search

Contributed by *Yukun Luo*. Posted on January 7, 2025

Yukun Luo[1,2], Jie Jiang[1,2], Ruihui Wang[1,2]

1. School of Space and Earth Science, Beihang University, Beijing 102206, China

2. Key Laboratory of Space Environment Monitoring and Information Processing of MIIT, Beijing, China

RECENT COMMENTS

Neil Sheeley on Extraordinary Magnetic Flux Emergence…

Muh. KhaJ on Solar Farside Magnetograms from…

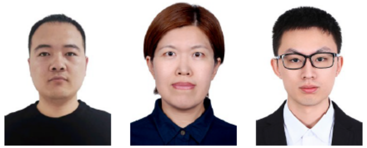
Solar magnetic fields, as the main source of solar activity, include two prominent components: active regions (ARs) and magnetic network (NW). The investigation of their interaction and temporal variation with

博士生王瑞慧的工作被国际日地物理委员会的新闻报导

Article 3:

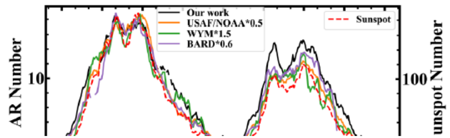
An Active Region Database for Solar Cycle Variability and Prediction

Ruihui Wang[1, 2], Jie Jiang[1, 2] and Yukun Luo[1, 2]
[1]School of Space and Earth Sciences, Beihang University, Beijing, China
[2]Key Laboratory of Space Environment Monitoring and Information Processing of MIIT, Beijing, China



Ruihui Wang Jie Jiang Yukun Luo

Solar active regions (ARs) are areas where strong magnetic fields are distributed. Within the framework of the Babcock–Leighton (BL) dynamo, the emergence of ARs and the subsequent transport of erupted AR flux on the surface reverse the polar field, and build a polar field with the opposite polarity. The polar field in solar minimum determines the subsequent cycle



Article

Highlight on Young Scientists

DISCIPLINE SCIENTISTS

Starting from March 2021, ISSI-BJ has appointed four new Discipline Scientists to conduct their research in Solar Physics, Planetary Science, Astrophysics, and Earth Observations at and through ISSI-BJ.

Prof. JIANG Jie

JIANG Jie is a professor and Ph.D. advisor at Beihang Unive sity, Beijing, China. In 2007, sl received her Ph.D. in Astrophysi from the National Astronomic O servatories of the Chinese Aca emy of Sciences. Her researc focuses on the physical forecast and generati mechanism of the solar magnetic cycle, its long-

担任国际空间科学研究所（北京）太阳物理学科科学家

Prof. SATOH Takehiko

Takehiko Satoh is a professor at the Department of Solar System Sciences, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA). After r Science University of study of Jupiter's infra ic, and atmospheric activities. His research interests also cover Mars and Venus and their atmospheres, in particular. Since 2001, he is involved in Japan's Venus orbiter mission, Akatsuki. He is the PI of the IR2 near-infrared camera and, since 2016, the mission's Project Scientist. He is also

Prof. SHI Jian

Jia ceive ology from China Ph.D. the U ta Barbara (UCSB), C respectively. He subs for Computational Ear as a Research Professor. He has worked as a PI journals and conferences. His current research interests include microwave remote sensing of water cycle-related components and data assimilation. Dr. Shi is a fellow of the Electromagnetics Academy and the Society of Photo-Optical Instrumentation Engineers (SPIE).

Prof. FALANGA Maurizio

Dr. Maurizio Falanga received his degree in Theoretical Physics and Astronomy at the University of Basel, Switzerland. Afterward, he obtained his Ph.D. degree in Astrophysics from the University of Rome "La Sapienza". After his Ph.D., he held various Post-doc positions, e.g., CEA-Saclay, Service d'Astrophysique (High Energy Division), Paris. His research interest is mostly focused on accretion and emission in neutron stars, white dwarfs, and black holes. He is also involved in the Einstein Probe mission led by CAS. Since 2009, he is the Science Program Manager at the International Space Science Institute (ISSI) in Bern, Switzerland, and starting from August 2021, he is a Director at ISSI in Bern and a Professor at the University of Bern.

Prof. KUEHRT Ekkehard

Dr. Ekkehard Kührt obtained his Ph.D. degree in Physics at the Humboldt-University Berlin, Germany. He held postdoc positions at the East-German Institute of Cosmic Research, at the Max-Planck Institute of Aeronomy in Lindau, and the Southwest Research Institute in San Antonio, Texas. From 1997 JAXA Hayabusa-2, and MMX missions. As DLR project leader "Rosetta Instruments" he was responsible for all scientific contributions of DLR to this ESA cornerstone mission. As first or co-author, Dr. Kührt has published over 250 peer-reviewed papers in journals to planetary sciences. He was honored with the "Humboldt-Award" of Humboldt-University, the "Research Award for young scientists" of Leopoldina-Academy, the "Innova-

不安全 | issibj.ac.cn/Program/DisciplineScientists/202104/t20210421_267383.html

不安全 | astronomy.pmo.cas.cn/zzjg/gzzywyh/

网站地图 | English | 联系我们

中国天文学会
CHINESE ASTRONOMICAL SOCIETY

首页 | 学会概况 | 组织机构 | 学会会员 | 学术交流 | 学会出版 | 表彰奖励 | 科普工作 | 天文人才 | 青托工程 | 搜索

首页>组织机构>工作/专业委员会

工作/专业委员会

- 组织系统图
- 工作/专业委员会
- 理事会名单
- 监事会名单

工作/专业委员会

十四届理事会工作、专业委员会正、副主任名单

文章来源： 发布时间：2019-07-04 【字号： 小 中 大 】

（十四届一次常务理事会讨论通过）

名称	主任（组长）	副主任
组织工作委员会	毛瑞青	陈冬妮、杨赣虎、汤海明、吴伟
太阳与日球专业委员会	季海生	姜杰、程鑫、刘煜、杨尚斌

担任中国天文学会太阳和日球物理分会副主任

SCOSTEP's international program in 2020-2024

PRESTO: Predictability of the variable Solar-Terrestrial Coupling

SCOSTEP

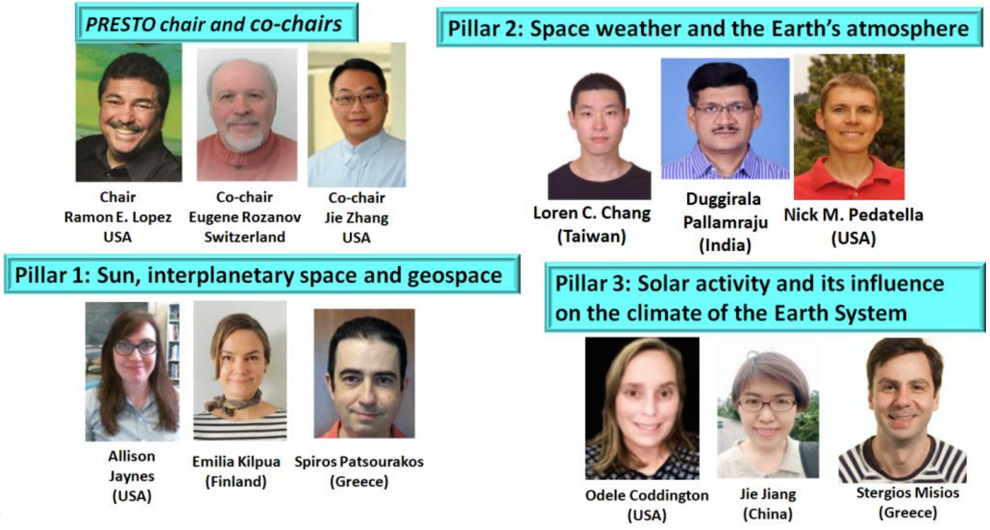
Scientific Committee on Solar-Terrestrial Physics

PRESTO:

Predictability of the variable Solar-Terrestrial Coupling

The SCOSTEP Next Scientific Program

Detailed documentation is available at:
http://www.issibj.ac.cn/Publications/Forum_Reports/201404/W020190620592906717714.pdf



担任国际科学联合会-日地物理科学委员会(SCOSTEP)PRESTO项目联合主席

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

ABOUT US | SCIENTIFIC PROGRAMS | CAPACITY BUILDING | AWARDS | EVENTS | RESOURCES | CONTACT US | SEARCH

Current Scientific Discipline Representatives

As of November 2024

NAME	YEAR	COUNTRY	DISCIPLINE
Hilde Nesse	2020	Norway	Atmosphere - High Enery Plasma
Nandita Srivastava	2020	India	Geomagnetic Consequences of Solar Events
Petra Koucká Knížová	2020	Czech Republic	Ionosphere-Atmosphere Coupling
Natalie Krivova	2020	Germany	Long-term Solar Variability and Climate
Scott Mcintosh	2020	USA	Solar Physics
Thando Ndarana	2020	South Africa	Stratosphere-Troposphere Coupling
Seok-Woo Son	2020	South Korea	Stratosphere-Troposphere Coupling
Shigeo Yoden	2020	Japan	Sun-Climate
Alan Wood	2023	United Kingdom	Ionosphere
Solene Lejosne	2023	USA	Magnetosphere
Lauri Holappa	2023	Finland	Magnetosphere-Ionosphere Coupling
Ankush Bhaskar	2023	India	Magnetosphere-Ionosphere Coupling
Lisa Baddeley	2023	Norway	Magnetosphere-Ionosphere Coupling
Shasha Zou	2023	USA	Magnetosphere-Ionosphere Coupling
Adriana Valio	2023	Brazil	Solar Physics
Jie Jiang	2023	China	Solar Physics
Mateja Dumbović	2023	Croatia	Solar Physics
Johan Muhamad	2023	Indonesia	Solar Physics
Margit Haberreiter	2023	Switzerland	Solar Physics, Solar Activity and Sun-Climate
Joan Burkepile	2023	USA	Solar Physics
Monica Laurenza	2023	Italy	Space Weather, Solar and Heliospheric Physics
Carine Briand	2023	France	Space Weather, Solar Physics

https://scostep.org/about/sdrs/sdrs2/

SCOSTEP的41名学科代表中，

唯一的中国学者

SPRINGER LINK　　Log in

Menu　Search　Cart

Home　Solar Physics　Editors

Solar Physics

Publishing model: Hybrid

国际SCI期刊《*Solar Physics*》顾问委员会成员

Advisory Board:

James A. Klimchuk, *NASA Goddard Space Flight Center, Greenbelt, MD, USA* (Chair)

Sarbani Basu, *Yale University, New Haven, CT, USA*; Paul Charbonneau, *Université de Montréal, Quebec, Canada*; Peng Fei Chen, *Nanjing University, Nanjing, China*; Mark Cheung, *CSIRO, Marsfield, NSW, Australia*; Edward W. Cliver, *National Solar Observatory, Boulder, CO, USA*; Ineke De Moortel, *University of St Andrews, UK*; Laurent Gizon, *MPS, Göttingen, Germany* ; Louise Harra, *PMOD/WRC, Davos & Zurich, Switzerland*; Jie Jiang, *Beihang University, Beijing, China*; Miho Janvier, *Institut d'Astrophysique Spatiale, Orsay, France*; K.D. Leka, *NorthWest Research Associates, Boulder, CO, USA*; Fernando Moreno-Insertis, *Instituto de Astrofisica de Canarias, La Laguna, Spain*; Valery Nakariakov, *University of Warwick, UK*; Dibyendu Nandi, *IISER, Kolkata, India*; Eric R. Priest, *St Andrews University, UK*; Kazunari Shibata, *Kwasan and Hida Observatories, Kyoto, Japan*; Sami K. Solanki, *MPS, Göttingen, Germany*; Manuela Temmer, *University of Graz, Austria*; Shin Toriumi, *JAXA, Sagamihara, Japan*; Ilya Usoskin, *University of Oulu, Finland*; Nicole Vilmer, *Observatoire Paris, Meudon, France*; Anthony R. Yeates, *Durham University, UK*; Takaaki Yokoyama, *Kyoto University, Japan*