

# Research in Astronomy and Astrophysics

Vol. 24 No. 12

December 2024

## CONTENTS

Heliospheric Effect on Solar Activity Parameters during Maximum Phase of Solar Cycle 24 (2012–2015) <i>P. R. Singh, Upendra Kr. Singh Kushwaha, A. K. Singh and T. K. Pant</i> .....	125001
Near-Earth Asteroids as the Parents of the $\delta$ -Cancrid Meteoroid Stream <i>G. I. Kokhirova, M. Zhang, X.-G. Li, A. I. Zhommuhammad and X. Liu</i> .....	125002
Testing the Phenomenological Interacting Dark Energy Model with Gamma-Ray Bursts and Pantheon+ type Ia Supernovae <i>Xiao-Dong Nong and Nan Liang</i> .....	125003
Identification of Z Cam? s Historical Counterpart: The Quest for an Ancient Nova <i>Bo-Shun Yang and Susanne M. Hoffmann</i> .....	125004
A New Approach of Data-driven Simulation and its Application to Solar Active Region 12673 <i>Zhi-Peng Liu, Chao-Wei Jiang, Xin-Kai Bian, Qing-Jun Liu, Peng Zou and Xue-Shang Feng</i> .....	125005
Revisit the $\gamma$ -Ray Flare Associated with Blazar Mrk 421 <i>Xiang-Tao Zeng, Ze-Yuan Tang and Jun-Hui Fan</i> .....	125006
Latitudinal and Solar Cycle Distribution of Extreme (?X5) Flares During 1976–2018 <i>Qi Li, Xi-Wen Zhang and Gui-Ming Le</i> .....	125007
A Photometric and Astrometric Study of Open Star Clusters FSR-163 and Majaess 215 Using Gaia DR3 <i>Ola Ali, A. L. Tadross, A. I. Osman and Z. M. Hayman</i> .....	125008
ALMA and GMRT Studies of Dust Continuum Emission and Spectral Lines Toward Oort Cloud Comet C/2022 E3 (ZTF) <i>Arijit Manna, Sabyasachi Pal, Sekhar Sinha and Sushanta Kumar Mondal</i> .....	125009
High-resolution Observations of Clustered Dynamic Extreme-Ultraviolet Bright Tadpoles Near the Footpoints of Corona Loops <i>Rui Wang, Ying D. Liu, L. P. Chitta, Huidong Hu and Xiaowei Zhao</i> .....	125010
Components and Anisotropy of 3D QFP Waves During the Early Solar Eruption <i>Jialiang Hu, Jing Ye, Yuhao Chen, Zhixing Mei, Shanshan Xu and Jun Lin</i> .....	125011
JWST Observations Constrain the Time Evolution of Fine Structure Constants and Dark Energy-electromagnetic Coupling <i>Ze-Fan Wang, Lei Lei, Lei Feng and Yi-Zhong Fan</i> .....	125012
BSN: The First Photometric Analysis of Contact Binary Systems V1961 Cyg and V0890 Lyr <i>Sabrina Baudart and Atila Poro</i> .....	125013
Spectroscopic Study of Late-type Emission-line Stars Using the Data from LAMOST DR6 <i>D. Edwin, Blesson Mathew, B. Shridharan, Vineeth Valsan, S. Nidhi et al.</i> .....	125014
Modeling the Covariance Matrix for the Power Spectra Before and After the BAO Reconstruction <i>Ruiyang Zhao, Kazuya Koyama, Yuting Wang and Gong-Bo Zhao</i> .....	125015
Constrain the Jerk Parameters with DESI 2024 Data <i>Jia-Wei Wu and Kun-Yuan Hong</i> .....	125016
A Special Kind of Interplanetary Coronal Mass Ejection <i>H. Q. Feng, Y. Zhao, G. Q. Zhao, H. B. Li, L. Xiang and J. M. Wang</i> .....	125017
Simulating the Peculiar Periphery of the Cygnus Loop <i>Jun-Yu Shen, Bi-Wen Bao and Li Zhang</i> .....	125018
Multi-layer Perceptron for Predicting Galaxy Parameters (MLP-GaP): Stellar Masses and Star Formation Rates <i>Xiaotong Guo (郭晓通), Guanwen Fang, Haicheng Feng and Rui Zhang</i> .....	125019
Using Cartesian Slice Plots of a Cosmological Simulation as Input of a Convolutional Neural Network <i>G. M. Xiang, M. Zha, J. N. Zhou and Y. Xing</i> .....	125020
Measuring the Time Variation of the Fine-structure Constant with Quasars Detected by LAMOST <i>Jin-Nan Wei (魏晋南), Rui-Jie Chen (陈睿劼), Jun-Jie Wei (魏俊杰) et al.</i> .....	125021

## Instructions for authors

*Research in Astronomy and Astrophysics* publishes original research papers and reviews on all branches of astronomy and astrophysics. Reviews are by invitation only. Important new results that require rapid publication can be submitted as a Letter (Letters must be restricted in length to 6 printed pages).

Authors who submit a paper are expected to be able to certify that the paper is original work, has not been published before and is not being considered for publication elsewhere. By submitting a manuscript to RAA, the corresponding author explicitly states that all co-authors have read the manuscript and agree with its contents.

Papers should be written in grammatical English. Papers can be typeset directly from the author's TeX or LaTeX file as an alternative to conventional typesetting. More information on how to prepare a manuscript can be found online at <http://www.raa-journal.org>.

If there is any question, please contact with the editorial Office:

Ya-Yuan Wen    Bing-Rong Xie    James E. Wicker    Yu Xin    Xiao-Chun Mao  
RAA Editorial Office,  
National Astronomical Observatories,  
Chinese Academy of Sciences,  
20A Datun Road, Chaoyang District,  
Beijing 100101, China  
Telephone: +86 10 64853746;  
Fax: +86 10 64859720  
E-mail: raa@raa-journal.org

## Institutional subscription information: 2025 volume

For international subscription information for 2025 please contact  
the Journals Subscription Fulfilment department on [custserv@ioppublishing.org](mailto:custserv@ioppublishing.org).

The Research in Astronomy and Astrophysics has been accepted for inclusion in the following ISI products:

- Science Citation Index (SCI), including the Web of Science;
- Research Alert;
- Current Contents/Physical, Chemical & Earth Sciences (CC/PC&ES)

**Research in Astronomy and Astrophysics 《天文和天体物理学研究(英文)》**

Vol. 24 No. 12 December 2024

---

Edited by	Editorial Office of Research in Astronomy and Astrophysics
Editors-in-Chief	Zhanwen Han and Liang Gao
Superintended by	Chinese Academy of Sciences
Sponsored by	Chinese Astronomical Society, National Astronomical Observatories, Chinese Academy of Sciences
Published by	Editorial Office of Research in Astronomy and Astrophysics
Printed by	Beijing Kexin Printing Co. Ltd.
Distributed by	Science Press in China and IOP Publishing (Temple Circus, Temple Way, Bristol, BS1 6HG, UK)

---

ISSN 1674-4527

CN 11-5721/P

<http://www.raa-journal.org>

邮发代号: 2-257

国内定价: 80.00元

国内外公开发行

ISSN 1674-4527



9 771674 452242

# Research in Astronomy and Astrophysics

## Editors-in-Chief:

Zhanwen Han      Yunnan Observatories, Chinese Academy of Sciences (CAS), Kunming  
Liang Gao          Beijing Normal University, Beijing

## Steering Committee:

Luis Ho              Peking University, Beijing  
Wing-Huen Ip        “National” Central University, Chung-Li  
Yipeng Jing           Shanghai Jiao Tong University, Shanghai  
Jingxiu Wang         University of Chinese Academy of Sciences, Beijing  
Robert Williams     University of California, Santa Cruz

## Editorial Board:

Xuefei Chen              Yunnan Observatories, CAS, Kunming  
Xuelei Chen              National Astronomical Observatories, CAS, Beijing  
Jun Cui                   Sun Yat-sen University, Guangzhou  
Wei Cui                   Tsinghua University, Beijing  
Mingde Ding              Nanjing University, Nanjing  
He Gao                    Beijing Normal University, Beijing  
Chengli Huang           Shanghai Astronomical Observatory, CAS, Shanghai  
Jianghui Ji              Purple Mountain Observatory, CAS, Nanjing  
Xu Kong                   University of Science and Technology of China, Hefei  
Hyung Mok Lee          Seoul National University, Seoul  
Di Li                    Tsinghua University, Beijing  
Xiangdong Li           Nanjing University, Nanjing  
Jifeng Liu                National Astronomical Observatories, CAS, Beijing  
Xiaowei Liu              Yunnan University, Kunming  
Yinzhe Ma                University of Kwazulu-Natal, Durban  
Nikolay N. Samus       Institute of Astronomy, Russian Academy of Sciences, Moscow  
Zhiqiang Shen           Shanghai Astronomical Observatory, CAS, Shanghai  
Annapurni Subramaniam Indian Institute of Astrophysics, Bangalore  
Hui Tian                Peking University, Beijing  
Xuebing Wu              Peking University, Beijing  
Long Xiao               China University of Geosciences, Wuhan  
Ji Yang                   Purple Mountain Observatory, CAS, Nanjing  
Gang Zhao               National Astronomical Observatories, CAS, Beijing  
Gongbo Zhao           National Astronomical Observatories, CAS, Beijing  
Guiping Zhou           National Astronomical Observatories, CAS, Beijing  
Yongtian Zhu           Nanjing Institute of Astronomical Optics & Technology, CAS, Nanjing

© 2024 National Astronomical Observatories, Chinese Academy of Sciences and IOP Publishing Ltd. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the copyright owner.

Published monthly in hard copy by Science Press, 16 Donghuangchenggen North Street, Beijing 100717, China and online by IOP Publishing, Temple Circus, Temple Way, Bristol, BS1 6HG, UK.