

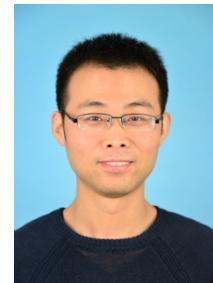
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# XIN CHENG

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Birth: August, 1985



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## WORK EXPERIENCES/EDUCATION

2019 Feb---	Humboldt Fellowship for Experienced Researcher, Max Planck Institute for Solar System Research, German
2015 Jul---	Associate Professor, School of Astronomy and Space Science, Nanjing University, China
2012 Jul---2015 Jun	Research Scientist, Nanjing University, China
2007 Sep---2012 Jun	PhD, Astronomy, Nanjing University, China
2010 Oct---2011 Dec	Joint PhD fellowship, George Mason University, USA
2003 Sep---2007 Jun	B.S., Physics, Zhejiang University of Technology, China

## RESEARCH INTERESTS

1. Solar Eruptions (CMEs, Flares, Filaments, and Shocks)
2. Magnetic Reconnection
3. Solar Radio Bursts
4. Prediction of Space Weather
5. Stellar Mass Ejections

## TEACHING

Hot topics in Astrophysics (Level 3, Spring)

Introduction to Space Physics (Level 3, Fall)

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## PROJECTS/GRANTS

**2018---2021: PI:** Coronal Mass Ejections, NFSC-Excellent Youth Foundation [In progress]

**2017---2020: PI:** 3D Evolution of Coronal Mass Ejections, NFSC of Jiangsu-Distinguished Youth Foundation [In progress]

**2018---2022: CI:** Corona Magnetic Diagnosis and Related Physics Based on MUSER Data, NFSC-Major Program [In progress]

**2014---2016: PI:** Investigating the Origin and Initiation of Coronal Mass Ejections, NFSC-Youth Foundation [Finished]

## SCIENTIFIC SERVICE:

**Referee** for SCIENCE, The Astrophysical Journal, Solar Physics, Research in Astronomy and Astrophysics, Advances in Space Research, SCIENCE CHINA Earth Sciences, Chinese Journal of Space Science et al.

Member of Chinese Astronomy Society, American Geophysical Union

## HONORS/AWARDS:

**2017:** Alexander Von Humboldt Fellowship for Experienced Researcher

**2017:** “Dengfeng” Talent Program of Nanjing University

**2017:** NFSC Award of Jiangsu Province for Distinguished Young Scholars

**2017:** NFSC Award for Excellent Young Scholars

**2016:** Distinguished Young Scientist—Honorable Mention Award, SCOSTEP

**2015:** 5th “Huang Shu-Shu Award”, Chinese Astronomy Society

**2015:** The Young Scientist Award, 3th Asia-Pacific Solar Physics Meeting

**2013:** Basu Early Career Award in Sun-Earth systems Science, AGU/SPA

**2013:** Excellent Doctoral Dissertation Award of Jiangsu Province

**2010:** Prize of New Young Scientist, Ministry of Education, China

## INVITED TALKS

**15.** Asia Oceania Geosciences Society (AOGS) conference, “Large-scale Solar Eruptions and Small-scale Magnetic Reconnection”, July 28-Aug 02, Singapore, 2019

**14.** First Ten Years of GST meeting, “Formation of magnetic flux ropes”, 11-17 March, Newark, USA, 2019

**13.** The Second China-Europe Solar Physics meeting, “Observational aspects of magnetic flux ropes”, Croatia, 2019

**12.** The Second Asia-Pacific Conference on Plasma Physics, “Observations of turbulent magnetic reconnection within a solar current sheet”, Kanazawa, Japan, 2018

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- 11.** COSPAR meeting, “Early kinematical evolution of coronal mass ejections”, Pasadena, California, USA, 2018
  - 10.** EGU General Assembly, “Structures and mechanisms of solar eruptions”, Vienna, Austria, 2017
  - 9.** Fifth Chinese Youth Astronomy Meeting, “Magnetic Reconnection during the Early Process of CMEs”, Weihai, China, 2016
  - 8.** Fall AGU meeting, San Francisco, California, USA, 2016 (Session co-convener)
  - 7.** COSPAR meeting, “Origin and Evolution of CMEs Observed by SDO, STEREO and IRIS”, Istanbul, Turkey, 2016 (Cancelled due to military coup)
  - 6.** IRIS-7 workshop, “AIA and IRIS observations of magnetic flux ropes”, Weihai, China, 2016
  - 5.** 3th Asia-Pacific Solar Physics Meeting, “Solar Magnetic Flux Ropes”, Seoul, Korea, 2015
  - 4.** 2015 Chinese Astronomy Annual Meeting, “Origin and Evolution of Coronal Mass Ejections: An Magnetic Flux Rope”, Beijing, China, 2015
  - 3.** 26th General Assembly of the IUGG, “Origin and Evolution of Coronal Mass Ejections Revealed by SDO”, Prague, Czech Republic, 2015
  - 2.** Fall AGU meeting, “Initiation and Evolution of Flux-rope Induced CMEs”, San Francisco, California, USA, 2013
  - 1.** XIIth IAGA Scientific Assembly, “Observations of CME flux rope revealed by SDO and STEREO”, Merida Yucatan, Mexico, 2013

## REFEREED PUBLICATIONS ([ADS](#) and [Google Scholar](#))

### 2018

- 57. Liu, T., Su, Y., **Cheng, X.**, van Ballegooijen, A., Ji, H. Magnetic Field Modeling of Hot Channels in Four Flare/Coronal Mass Ejection Events. 2018, **ApJ**, 868, 59.
- 56. Liu, L.\*., **Cheng, X.\***, Wang, Y., Zhou, Z., Guo, Y., Cui, J. Rapid Buildup of a Magnetic Flux Rope during a Confined X2.2 Class Flare in NOAA AR 12673. 2018, **ApJL**, 867, L5.
- 55. Cheng, X.\***, Li, Y., Wan, L. F., Ding, M.^D., Chen, P. F., Zhang, J., Liu, J. J. Observations of Turbulent Magnetic Reconnection within a Solar Current Sheet. 2018, **ApJ** 866, 64. [Highlighted]
- 54. Song, H. Q., Zhou, Z. J., Li, L. P., **Cheng, X.**, Zhang, J., Chen, Y., Chen, C. X., Ma, X. W., Wang, B., Zheng, R. S. The Reversal of a Solar Prominence Rotation about Its Ascending Direction during a Failed Eruption. 2018, **ApJL** 864, L37.
- 53. Song, H. Q., Chen, Y., Qiu, J., Chen, C. X., Zhang, J., **Cheng, X.**, Shen, Y. D., Zheng, R. S. The Acceleration Process of a Solar Quiescent Filament in the Inner Corona. 2018, **ApJL**, 857, L21.

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52. Xing, C., Li, H. C., Jiang, B., **Cheng, X.\***, Ding, M. D. Two Types of Long-duration Quasi-static Evolution of Solar Filaments. 2018, **ApJL**, 857, L14.

51. Su, W., Guo, Y., Erdelyi, R., Ning, Z. J., Ding, M. D., **Cheng, X.**, Tan, B. L. Period Increase and Amplitude Distribution of Kink Oscillation of Coronal Loop. 2018 **Scientific Reports** 8, 4471.

**50. Cheng, X.\***, Kliem, B., Ding, M. D. Unambiguous Evidence of Filament Splitting-induced Partial Eruptions. 2018, **ApJ**, 856, 48.

49. Li, Y., Xue, J. C., Ding, M. D., **Cheng, X.**, Su, Y., Feng, L., Hong, J., Li, H., Gan, W.~Q. Spectroscopic Observations of a Current Sheet in a Solar Flare. 2018, **ApJL**, 853, L15.

## 2017

48. Guo, Y., **Cheng, X.**, Ding, M. Origin and structures of solar eruptions II: Magnetic modeling. 2017, **Science China Earth Sciences**, 60, 1408-1439.

**47. Cheng, X.\***, Guo, Y., Ding, M. Origin and Structures of Solar Eruptions I: Magnetic Flux Rope. 2017, **Science China Earth Sciences**, 60, 1383-1407.

46. Song, H. Q., Chen, Y., Li, B., Li, L. P., Zhao, L., He, J. S., Duan, D., **Cheng, X.**, Zhang, J. The Origin of Solar Filament Plasma Inferred from In Situ Observations of Elemental Abundances, 2017, **ApJ**, 836, L11.

45. Zhu, X., Wang, H., **Cheng, X.\***, Huang, C. A Solar Blowout Jet Caused by the Eruption of a Magnetic Flux Rope, 2017 **ApJL**, 844, L20.

44. Hao, Q., Yang, K., **Cheng, X.**, Guo, Y., Fang, C., Ding, M. D., Chen, P. F., Li, Z. A Circular White-Light Flare with Impulsive and Gradual White-Light Kernels, 2017, **Nature Communications**, 8:2202

43. Song, H. Q., **Cheng, X.**, Chen, Y., Zhang, J., Wang, B., Li, L. P., Li, B., Hu, Q., Li, G. The Three-part Structure of a Filament-unrelated Solar Coronal Mass Ejection, 2017, **ApJ** 848, 21.

## 2016

42. Su, W.; **Cheng, X.\***; Ding, M. D.; Chen, P. F.; Ning, Z. J.; Ji, H. S. Investigating the Conditions of the Formation of a Type II Radio Burst on 2014 January 8, **ApJ**, 2016, 830, 70

**41. Cheng, X.\* & Ding, M. D.** The Characteristics of Footpoints of Solar Magnetic Flux Ropes during the Eruption, **ApJS**, 2016, 225, 16

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**40. Cheng, X.\* & Ding, M. D.** Spectroscopic Diagnostics of Solar Magnetic Flux Ropes Using Iron Forbidden Line, **ApJ Letters**, 2016, 823, 4

39. Linfeng Wan, **Xin Cheng\***, Tong Shi, Wei Su, Mingde Ding, The Formation and Early Evolution of a Coronal Mass Ejection and its Associated Shock Wave on 2014 January 8, **ApJ**, 2016, 826, 174

38. Sun, J. Q.; Zhang, J.; Yang, K.; **Cheng, X.**; Ding, M. D. Observation of Magnetic reconnection at a 3D null point associated with a solar eruption, **ApJ**, 2016, 830, 4

37. Vemareddy, P., **Cheng, X.**, & Ravindra, B., Sunspot Rotation as a Driver of Major Solar Eruptions in NOAA Active Region 12158, **ApJ**, 2016, 829, 24

36. Xue, Z., Yan, X., **Cheng, X.**, et al. Observing the release of twist by magnetic reconnection in a solar filament eruption, **Nature Communications**, 2016, 7, 11837

35. Wang, Rui; Liu, Ying D.; Wiegelmans, Thomas; **Cheng, Xin**; Hu, Huidong; Yang, Zhongwei, Relationship Between Sunspot Rotation and a Major Solar Eruption on 12 July 2012, **Solar Physics**, 2016, 49

34. Song, Hongqiang; Zhong, Ze; Chen, Yao; Zhang, Jie; **Cheng, Xin**; Zhao, Liang; Hu, Qiang; Li, Gang, A Statistical Study of the Average Iron Charge Distributions inside Magnetic Clouds for Solar Cycle 23, **ApJS**, 2016, 224, 27

33. Hong, Jie; Ding, M. D.; Li, Ying; Yang, Kai; **Cheng, Xin**; Chen, Feng; Fang, Cheng; Cao, Wenda, Bidirectional Outflows as Evidence of Magnetic Reconnection Leading to a Solar Microflare, **ApJL**, 2016, 820 (1)

## 2015

**32. Cheng, X.\***; Hao, Q.; Ding, M. D.; Liu, K.; Chen, P. F.; Fang, C.; Liu, Y. D. A Two-ribbon White-light Flare Associated with a Failed Solar Eruption Observed by ONSET, SDO, and IRIS. **ApJ** 2015, 809 (1).

31. Sun, J. Q.; **Cheng, X.\*(共同第一作者+通讯作者)**; Ding, M. D.; Guo, Y.; Priest, E. R.; Parnell, C. E.; Edwards, S. J.; Zhang, J.; Chen, P. F.; Fang, C., Extreme ultraviolet imaging of three-dimensional magnetic reconnection in a solar eruption. **Nature Communications** 2015, 6, 7598. [Featured Article]

30. **Cheng, X.\***; Ding, M. D.; Fang, C., IMAGING AND SPECTROSCOPIC DIAGNOSTICS ON THE FORMATION OF TWO MAGNETIC FLUX ROPES REVEALED BY SDO/AIA AND IRIS. **ApJ** 2015, 804 (2).

29. Su, W.; **Cheng, X.\***; Ding, M. D.; Chen, P. F.; Sun, J. Q., A TYPE II RADIO BURST WITHOUT A CORONAL MASS EJECTION. **ApJ** 2015, 804 (2).

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28. Guo, Y.; Erdelyi, R.; Srivastava, A. K.; Hao, Q.; **Cheng, X.**; Chen, P. F.; Ding, M. D.; Dwivedi, B. N., MAGNETOHYDRODYNAMIC SEISMOLOGY OF A CORONAL LOOP SYSTEM BY THE FIRST TWO MODES OF STANDING KINK WAVES. *ApJ* 2015, 799 (2).
27. Liu, K.; Wang, Y.; Zhang, J.; **Cheng, X.**; Liu, R.; Shen, C., EXTREMELY LARGE EUV LATE PHASE OF SOLAR FLARES. *ApJ* 2015, 802 (1).
26. Shi, T.; Wang, Y.; Wan, L.; **Cheng, X.**; Ding, M.; Zhang, J., PREDICTING THE ARRIVAL TIME OF CORONAL MASS EJECTIONS WITH THE GRADUATED CYLINDRICAL SHELL AND DRAG FORCE MODEL. *ApJ* 2015, 806 (2).
25. Song, H. Q.; Chen, Y.; Zhang, J.; **Cheng, X.**; Fu, H.; Li, G., ACCELERATION PHASES OF A SOLAR FILAMENT DURING ITS ERUPTION. *ApJL* 2015, 804 (2).
24. Song, H. Q.; Chen, Y.; Zhang, J.; **Cheng, X.**; Wang, B.; Hu, Q.; Li, G.; Wang, Y. M., EVIDENCE OF THE SOLAR EUV HOT CHANNEL AS A MAGNETIC FLUX ROPE FROM REMOTE-SENSING AND IN SITU OBSERVATIONS. *ApJL* 2015, 808 (1).
23. Song, H. Q.; Zhang, J.; Chen, Y.; **Cheng, X.**; Li, G.; Wang, Y. M., THE FIRST TASTE OF A HOT CHANNEL IN INTERPLANETARY SPACE. *ApJ* 2015, 803(2).

22. Zhang, Q. M.; Ning, Z. J.; Guo, Y.; Zhou, T. H.; **Cheng, X.**; Ji, H. S.; Feng, L.; Wiegelmann, T., MULTIWAVELENGTH OBSERVATIONS OF A PARTIALLY ERUPTIVE FILAMENT ON 2011 SEPTEMBER 8. *ApJ* 2015, 805 (1).

## 2014

21. **Cheng, X.\***; Ding, M. D.; Guo, Y.; Zhang, J.; Vourlidas, A.; Liu, Y. D.; Olmedo, O.; Sun, J. Q.; Li, C., TRACKING THE EVOLUTION OF A COHERENT MAGNETIC FLUX ROPE CONTINUOUSLY FROM THE INNER TO THE OUTER CORONA. *ApJ* 2014, 780 (1).
20. **Cheng, X.\***; Ding, M. D.; Zhang, J.; Srivastava, A. K.; Guo, Y.; Chen, P. F.; Sun, J. Q., ON THE RELATIONSHIP BETWEEN A HOT-CHANNEL-LIKE SOLAR MAGNETIC FLUX ROPE AND ITS EMBEDDED PROMINENCE. *ApJL* 2014, 789 (2).
19. **Cheng, X.\***; Ding, M. D.; Zhang, J.; Sun, X. D.; Guo, Y.; Wang, Y. M.; Kliem, B.; Deng, Y. Y., FORMATION OF A DOUBLE-DECKER MAGNETIC FLUX ROPE IN THE SIGMOIDAL SOLAR ACTIVE REGION 11520. *ApJ* 2014, 789 (2).
18. Sun, J. Q.; **Cheng, X.\***; Ding, M. D., DIFFERENTIAL EMISSION MEASURE ANALYSIS OF A LIMB SOLAR FLARE ON 2012 JULY 19. *ApJ* 2014, 786 (1).

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17. Sun, J. Q.; **Cheng, X.\***; Guo, Y.; Ding, M. D.; Li, Y., DYNAMIC EVOLUTION OF AN X-SHAPED STRUCTURE ABOVE A TRANS-EQUATORIAL QUADRUPOLE SOLAR ACTIVE REGION GROUP. **ApJL** 2014, 787 (2).

16. Chen, H.; Zhang, J.; **Cheng, X.**; Ma, S.; Yang, S.; Li, T., DIRECT OBSERVATIONS OF TETHER-CUTTING RECONNECTION DURING A MAJOR SOLAR EVENT FROM 2014 FEBRUARY 24 TO 25. **ApJL** 2014, 797 (2).

15. Song, H. Q.; Zhang, J.; Chen, Y.; **Cheng, X.**, DIRECT OBSERVATIONS OF MAGNETIC FLUX ROPE FORMATION DURING A SOLAR CORONAL MASS EJECTION. **ApJL** 2014, 792 (2).

14. Song, H. Q.; Zhang, J.; **Cheng, X.**; Chen, Y.; Liu, R.; Wang, Y. M.; Li, B., TEMPERATURE EVOLUTION OF A MAGNETIC FLUX ROPE IN A FAILED SOLAR ERUPTION. **ApJ** 2014, 784 (1).

## 2013

13. **Cheng, X.\***; Zhang, J.; Ding, M. D.; Liu, Y.; Poomvises, W., THE DRIVER OF CORONAL MASS EJECTIONS IN THE LOW CORONA: A FLUX ROPE. **ApJ** 2013, 763 (1).

12. **Cheng, X.\***; Zhang, J.; Ding, M. D.; Olmedo, O.; Sun, X. D.; Guo, Y.; Liu, Y., INVESTIGATING TWO SUCCESSIVE FLUX ROPE ERUPTIONS IN A SOLAR ACTIVE REGION. **ApJL** 2013, 769 (2).

11. Guo, Y.; Ding, M. D.; **Cheng, X.**; Zhao, J.; Pariat, E., TWIST ACCUMULATION AND TOPOLOGY STRUCTURE OF A SOLAR MAGNETIC FLUX ROPE. **ApJ** 2013, 779 (2).

10. Liu, K.; Zhang, J.; Wang, Y.; **Cheng, X.**, ON THE ORIGIN OF THE EXTREME-ULTRAVIOLET LATE PHASE OF SOLAR FLARES. **ApJ** 2013, 768 (2).

## 2012

9. Zhang, J.; **Cheng, X.**; Ding, M. D., Observation of an evolving magnetic flux rope before and during a solar eruption. **Nature Communications** 2012, 3, 747.  
[Featured Article]

8. **Cheng, X.\***; Zhang, J.; Olmedo, O.; Vourlidas, A.; Ding, M. D.; Liu, Y., INVESTIGATION OF THE FORMATION AND SEPARATION OF AN EXTREME-ULTRAVIOLET WAVE FROM THE EXPANSION OF A CORONAL MASS EJECTION. **ApJL** 2012, 745 (1).

7. **Cheng, X.\***; Zhang, J.; Saar, S. H.; Ding, M. D., DIFFERENTIAL EMISSION MEASURE ANALYSIS OF MULTIPLE STRUCTURAL COMPONENTS OF CORONAL MASS EJECTIONS IN THE INNER CORONA. **ApJ** 2012, 761 (1).

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6. Olmedo, O.; Vourlidas, A.; Zhang, J.; **Cheng, X.**, SECONDARY WAVES AND/OR THE "REFLECTION" FROM AND "TRANSMISSION" THROUGH A CORONAL HOLE OF AN EXTREME ULTRAVIOLET WAVE ASSOCIATED WITH THE 2011 FEBRUARY 15 X2.2 FLARE OBSERVED WITH SDO/AIA AND STEREO/EUVI. **ApJ** 2012, 756 (2).

## 2011

5. **Cheng, X.**; Zhang, J.; Ding, M. D.; Guo, Y.; Su, J. T., A COMPARATIVE STUDY OF CONFINED AND ERUPTIVE FLARES IN NOAA AR 10720. **ApJ** 2011, 732 (2).

4. **Cheng, X.**; Zhang, J.; Liu, Y.; Ding, M. D., OBSERVING FLUX ROPE FORMATION DURING THE IMPULSIVE PHASE OF A SOLAR ERUPTION. **ApJL** 2011, 732 (2).

## 2010

3. **Cheng, X.**; Ding, M. D.; Guo, Y.; Zhang, J.; Jing, J.; Wiegelmans, T., RE-FLARING OF A POST-FLARE LOOP SYSTEM DRIVEN BY FLUX ROPE EMERGENCE AND TWISTING. **ApJL** 2010, 716 (1).

2. **Cheng, X.**; Ding, M. D.; Zhang, J., A STUDY OF THE BUILD-UP, INITIATION, AND ACCELERATION OF 2008 APRIL 26 CORONAL MASS EJECTION OBSERVED BY STEREO. **ApJ** 2010, 712 (2).

1. **Cheng, X.**; Zhang, J.; Ding, M. D.; Poomvises, W., A STATISTICAL STUDY OF THE POST-IMPULSIVE-PHASE ACCELERATION OF FLARE-ASSOCIATED CORONAL MASS EJECTIONS. **ApJ** 2010, 712 (1).