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## Education/Appointments

- Columbia University, New York, USA  
Postdoc Research Scientist (2015-now, supervisor: Elena Aprile)
- Shanghai Jiao Tong University, Shanghai, China  
Ph.D. in Physics (2010-2015), Thesis: *Searching for Low Mass Dark Matter with the PandaX Liquid Xenon Detector* (advisor: Kaixuan Ni)
- Shanghai Jiao Tong University, Shanghai, China  
B.S. in Physics (2006-2010)

## Research Interest

- Dark matter physics and its direct detection
- Neutrino physics
- Particle detector development
- Software architecture development

## Research Experience

### XENON1T dark matter experiment (2015-present)

- **Analysis coordinator** of XENON1T experiment
- Lead the testing of various dark matter models on XENON1T data
- Initiated and lead the development of Bayesian statistical inference of dark matter model testing
- Initiated and lead the development of Bayesian framework for signal response modeling
- Initiated and lead in the modeling and optimization of detector's impurity evolution
- Initiated and lead the waveform simulation framework
- Contributed to the commissioning and successful operation of XENON1T Time Projection Chamber (TPC), the largest LXe-TPC in the world

## **PandaX dark matter experiment (2012-2015)**

- Initiated, lead and built independent raw data processing algorithm for PandaX
- Initiated, lead and built independent signal/background modeling for PandaX
- Initiated, lead and performed independent statistical inference study for PandaX
- Contributed to the commissioning and successful operation of PandaX TPC

## **XENON100 dark matter experiment (2010-2017)**

- Initiated and lead the study of signal response modeling using injected tritium calibration, demonstrated for the first time that simulation-based signal modeling is feasible and more precise
- Lead the analysis of searching the electronic recoil event modulation using 4-year XENON100 data
- Initiated and lead the modeling of the accidental coincidence background

## **Noble liquid detectors R&D (2010-present)**

- Designed, constructed and operated a liquid xenon detector to precisely measure the scintillation and ionization properties of liquid xenon for dark matter search, achieved the highest energy resolution in the world at the time
- Lead and performed the measurement of liquid xenon responses to low energy electronic recoils and the key parameters to achieve a high electronic recoil background rejection power in two-phase xenon detector for future dark matter experiment
- Lead the measurement of liquid xenon responses to low energy nuclear recoils at different field to further constrain the energy scale of dark matter signals in further LXe-based dark matter search experiment

## **Honors**

- Guanghai scholarship for outstanding graduate student, Shanghai, China (2015)
- Outstanding graduate student fellowship, Shanghai, China (2013-2015)

## **Publications**

1. XENON1T Dark Matter Data Analysis: Signal & Background Models, and Statistical Inference, XENON Collaboration, arXiv: 1902.11297 (**corresponding author**)
2. Constrain the Spin-Dependent WIMP-Nucleon Cross Sections With XENON1T, XENON Collaboration, arXiv: 1902.03234 (**Accepted by Phys. Rev. Lett.**)
3. First Results on the Scalar WIMP-Pion Coupling Using the XENON1T experiment, XENON Collaboration, **Phys. Rev. Lett.** **122**, 071301 (2019)

4. Simultaneous Measurement of the Light and Charge Response of Liquid Xenon to Low-Energy Nuclear Recoils at Multiple Electric Fields, E. Aprile, M. Anthony, **Q. Lin** et al., Phys. Rev. D 98, 112003 (**corresponding author**)
5. Dark Matter Search Results from a One TonneYear Exposure of XENON1T, XENON Collaboration, **Phys. Rev. Lett. 121, 111302 (on core writing team)**
6. Signal Yields of keV Electronic Recoils and Their Discrimination from Nuclear Recoils in Liquid Xenon, XENON Collaboration, Phys. Rev. D 97, 092007 (2018), (**corresponding author**)
7. Intrinsic backgrounds from Rn and Kr in the XENON100 experiment, XENON collaboration, Eur. Phys. J. C 78, no.2, 132 (2018)
8. The XENON1T Dark Matter Experiment, XENON collaboration, Eur. Phys. J. C 77, no.12, 881 (2017)
9. First Dark Matter Search Results from the XENON1T Experiment, XENON collaboration, **Phys. Rev. Lett. 119, 181301 (on core writing team)**
10. Search for WIMP Inelastic Scattering off Xenon Nuclei with XENON100, XENON collaboration, Phys. Rev. D 96, no.2, 022008 (2017)
11. Effective field theory search for high-energy nuclear recoils using the XENON100 dark matter detector, XENON collaboration, Phys. Rev. D 96, no.4, 042004 (2017)
12. Material radioassay and selection for the XENON1T dark matter experiment, XENON collaboration, Eur. Phys. J. C 77, no.12, 890 (2017)
13. Search for magnetic inelastic dark matter with XENON100, XENON collaboration, JCAP 2017, no.10, 039 (2017)
14. Search for Electronic Recoil Event Rate Modulation with 4 Years of XENON100 Data, XENON Collaboration, **Phys. Rev. Lett. 118, 101101 (2017), (corresponding author)**
15. Removing krypton from xenon by cryogenic distillation to the ppq level, XENON collaboration, Eur. Phys. J. C 77, no.5, 275 (2017)
16. Results from a Calibration of XENON100 Using a Source of Dissolved Radon-220, XENON collaboration, Phys. Rev. D 95, no.7, 072008 (2017)
17. Search for two-neutrino double electron capture of  $^{124}\text{Xe}$  with XENON100, XENON collaboration, Phys. Rev. C 95, no.2, 024605 (2017)
18. Dark Matter Results from First 98.7 Days of Data from the PandaX-II Experiment, PandaX collaboration, **Phys. Rev. Lett. 117, no.12, 121303 (2016)**
19. Dark Matter Search Results from the Commissioning Run of PandaX-II, PandaX collaboration, Phys. Rev. D 93, no.12, 122009 (2016)
20. XENON100 dark matter results from a combination of 477 live days, XENON collaboration, Phys. Rev. D 94, 122001 (2016)

21. Scintillation and ionization responses of liquid Xenon to low energy electronic and nuclear recoils at drift fields from 236 V/cm to 3.93 kV/cm, **Qing Lin et al., Phys. Rev. D 92, 032005 (2015)**
22. Low-mass dark matter search results from full exposure of the PandaX-I experiment, PandaX collaboration, Phys. Rev. D 92, 052004 (2015), (corresponding author)
23. MiX: A Position Sensitive Dual-Phase Liquid Xenon Detector, S. Stephenson, J. Haefner, Q. Lin et al., JINST 10, no.10, P10040 (2015)
24. High Resolution Gamma Ray Detection in a Dual Phase Xenon Time Projection Chamber, **Qing Lin et al., JINST 9 P04014 (2014)**
25. First dark matter search results from the PandaX-I experiment, PandaX collaboration, Sci. China Phys. Mech. Astron. 57, 2024-2030 (2014)
26. PandaX: A Liquid Xenon Dark Matter Experiment at CJPL, PandaX collaboration, Sci. China Phys. Mech. Astron. 57, 1476-1494 (2014)
27. Observation and applications of single-electron charge signals in the XENON100 experiment, XENON collaboration, J. Phys. G: Nucl. Part. Phys. 41 (2014) 035201
28. Analysis of the XENON100 Dark Matter Search Data, XENON collaboration, Astropart. Phys. 54 (2014) 11-24
29. The neutron background of the XENON100 dark matter search experiment, XENON collaboration, J. Phys. G: Nucl. Part. Phys. 40, 115201 (2013)
30. Response of the XENON100 dark matter detector to nuclear recoils, XENON collaboration, Phys. Rev. D 88, 012006 (2013)
31. Limits on spin-dependent WIMP-nucleon cross sections from 225 live days of XENON100 data, XENON100 Collaboration, **Phys. Rev. Lett. 111, 021301 (2013)**
32. Dark Matter Results from 225 Live Days of XENON100 Data, XENON100 Collaboration, **Phys. Rev. Lett. 109, 181301 (2012)**
33. The distributed Slow Control System of the XENON100 Experiment, XENON collaboration, JINST 7 T12001(2012)
34. Dark Matter Results from 100 Live Days of XENON100 Data, XENON100 Collaboration, **Phys. Rev. Lett. 107, 131302 (2011)**
35. Implications on Inelastic Dark Matter from 100 Live Days of XENON100 Data, XENON100 Collaboration, Phys. Rev. D 84, 061101 (2011)

## Conference Talks and Seminars

- Recent Results from XENON1T, Seminar at SLAC National Accelerator Laboratory, Menlo Park, California, USA
- Recent Results from XENON1T, Seminar at Brookhaven National Laboratory, Long Island, USA (Oct. 2018)

- Measuring Low Energy Scintillation/Ionization Response in Liquid Xenon, XeSAT conference, Tokyo, Japan (Sep. 2018)
- First Results from XENON1T and Upgrades for XENONnT, Seminar at the University of Tokyo Institute for Cosmic Ray Research Kamioka Observatory, Gifu, Japan (Oct. 2017)
- First Results from XENON1T, TeVPA conference, Columbus, USA (Aug. 2017)
- Search for Periodic Rate Variations in XENON100 and Comparison with DAMA/LIBRA Annual Modulation, APS Aprile meeting, Washington DC, USA (Jan. 2017)
- Response and Discrimination of Low-Energy Electronic and Nuclear Recoils in Liquid Xenon, LOWECAL Workshop, Chicago, USA (Sep. 2015)
- Response of low-energy electronic and nuclear recoils in liquid xenon, LIDINE conference, Albany, USA (Aug. 2015)
- Probing the Intrinsic Electron Recoil Rejection Power in Liquid Xenon, The 9th Chinese Physics Symposium of High Energy Physics, Wuhan, China (Apr. 2014)

## References

1. Elena Aprile, professor, Columbia University  
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2. Luca Grandi, assistant professor, University of Chicago  
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3. Kaixuan Ni, associate professor, University of California, San Diego  
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4. Jianglai Liu, professor, Shanghai Jiao Tong University, Shanghai  
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