

Curriculum Vitae

TATJANA MILETIC

Chemistry and Physics Department
Arcadia University
450 S Easton Road, Glenside, PA 19038

Phone: 215 572 2128 (office)
e-mail: miletict@arcadia.edu

EDUCATION

Ph.D., Drexel University, Philadelphia, PA
Department of Physics, 2009

M.S., Drexel University, Philadelphia, PA
Department of Physics, 2003

B.S., University of Belgrade, Belgrade, Serbia
Department of Physics, 2000

PROFESSIONAL EXPERIENCE

Professor, August 2012 - present
Chemistry and Physics Department, Arcadia University, Glenside, PA

Visiting Professor, August 2018 - June 2019
Department of Physics and Astronomy, University of Hawaii, Honolulu, HI

Visiting Professor, September 2009 - June 2012
Department of Physics and Astronomy, Rowan University, Glassboro, NJ

Teaching Assistant, 2001-2009
Department of Physics, Drexel University, Philadelphia, PA

Summary of teaching responsibilities:

- Taught various physics courses, from introductory, fundamental physics classes like Physics 211 and 201 to advanced courses, including Quantum Mechanics, Modern Physics, Mathematical Physics, Engineering Mechanics, Electronic Circuits, Advanced Physics and Instrumentation Lab.
- Through these courses gained extensive experience and knowledge in teaching methods, in person, online and hybrid, laboratory equipment and electronic set up used in these labs that span all areas of physics, from introductory classical physics to contemporary physics.

RESEARCH INTERESTS

- Neutrino physics: measurement of neutrino oscillation parameters
- Physics beyond Standard Model, dark matter search, nucleon decay and rare decays.
- Physics Education

RESEARCH EXPERIENCE

Kamioka Liquid AntiNeutrino Detector (KamLAND)] collaborator June 2002 - October 2009

Double Chooz collaborator September 2009 - 2020

DarkSide collaborator April 2013 - present

Visiting Research Professor, Department of Physics and Astronomy, University of Hawaii, Honolulu, August 2018 - August 2019

I have gained my research experience by working on the KamLAND (Kamioka Liquid scintillator Anti-Neutrino Detector) experiment. I have been a member of KamLAND collaboration since May 2002. KamLAND is an international, mainly Japanese-American effort that involves over 100 scientists. It is a 1Kt liquid scintillator detector, built to study the neutrino oscillation phenomenon, one of the burning questions of elementary particle physics in the last decade.

From September 2009 to 2018, I have been a member of the Double Chooz Collaboration. The Double Chooz experiment's goal was to search for a non-vanishing value of the θ_{13} neutrino mixing angle. This was the last step to accomplish prior to moving towards a new era of precision measurements in the lepton sector. This was a collaboration with a Drexel University group led by Dr.Charles Lane.

In April of 2013 I joined the DarkSide collaboration. This is an international affiliation of universities and labs seeking to directly detect dark matter in the form of weakly interacting massive particles (WIMPs). The DarkSide program will use several innovative techniques to positively identify Dark Matter signals and to understand and suppress background. This was a collaboration with a Temple University group led by Dr.Jeff Martoff and University of Hawaii group led by Dr.Jelena Maricic.

My specific research activities are:

- Participated in the operation and maintenance of the KamLAND detector and Double Chooz detector.
- Wrote software to analyze MACRO - KamLAND backup front-end electronic data.
- Utilized the software for operating MACRO electronic and checked compatibility and absence of conflict with the primary front-end electronics system by acquiring and comparing Nsums (Photomultiplier tubes - PMTs hit information) from all PMT channels.
- Analyzed MACRO data in order to determine low energy background signals in the KamLAND Detector.
- Tested operation of MACRO electronic equipment on site.
- Collaborated in publications on neutrino oscillations.
- Developed software to gauge detection efficiency such as writing Neutron Monte Carlo simulation in order to estimate the distance energetic neutrons travel before thermalizing and justify the analysis cuts.
- Collaborated on the production and design of front end electronics for the Double Chooz far detector.
- Supervised students in the testing of front end electronics for near the Double Chooz detector. Funded by an NSF award.
- Collaborated on calibration and electronics research and development for DarkSide Detector.
- Proposed a novel detector named LiLAND with a goal to detect postulated sterile neutrinos.

AWARDS

- ITC Grant 2023 - Astronomy Research - Astrophotography
- ITC Grant 2022 - Astronomy for All with a Smart Telescope
- December 2021 - S-STEM NSF Award "Promoting Retention by Fostering Identity and Belongingness in Low Income Students Majoring in Scientific Disciplines and Mathematics ", Co-Pi at Arcadia University

- ITC Grant 2017 - Parallel Programming with RaspberryPis
- September 2010 - NSF Grant Awarded “Systems to Increase Neutrino Detection Precision with the Double Chooz Detectors”.
Subcontact with Drexel University, Dr.Charles Lane is Principal Investigator at Drexel, I am Principal Investigator at Arcadia University.
<http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=1002427>
- 2016 Breakthrough Prize in Fundamental Physics
<https://breakthroughprize.org/>

MEMBERSHIPS

- APS American Physical Society
- AWIS Association for Women in Science
- STS Start Talking Science association

COMPUTER SKILLS

Operating Systems: Linux, Microsoft Windows

Software: C++,C, ROOT, Python, LaTeX

SERVICE TO UNIVERSITY

- Chemistry and Physics Department Chair fall 2021 - present
- Program Director for pre-engineering program, fall 2020 - present
- Boyer Observatory Faculty Board, spring 2022 - present
- Curricula revisions for physics, chemistry and pre-engineering
- Academic Standing Committee, spring 2104
- Program Evaluation Task Force, fall 2016
- Curriculum Assessment Team, spring 2021
- Environmental Sustainability Faculty Committee fall 2019 - spring 2021
- Academic Technology Services Committee fall 2022 - spring 2023
- University Grant Advisory Board fall 2023 - present
- Faculty Senate Academics Committee fall 2024 - present

PUBLICATIONS IN REFEREED JOURNALS

- Miletic, T., Maricic, J. (2024). LiLAND - LiThium Electron Antineutrino Source at KamLAND. Zenodo.
<https://doi.org/10.5281/zenodo.13254081>
- H. de Kerret *et al.* [Double Chooz], *Eur. Phys. J. C* **82** (2022) no.9, 804 doi:10.1140/epjc/s10052-022-10726-x [arXiv:2201.13285 [physics.ins-det]].
- P. Agnes *et al.* [DarkSide-20k], *Eur. Phys. J. C* **81** (2021) no.4, 359 doi:10.1140/epjc/s10052-021-09121-9 [arXiv:2101.08686 [physics.ins-det]].
- P. Agnes *et al.* [DarkSide 20k], *JCAP* **03** (2021), 043 doi:10.1088/1475-7516/2021/03/043 [arXiv:2011.07819 [astro-ph.HE]].
- T. Abrahão *et al.* [Double Chooz], *Eur. Phys. J. C* **81** (2021) no.8, 775 doi:10.1140/epjc/s10052-021-09459-0 [arXiv:2009.05515 [hep-ex]].
- T. Abrahão *et al.* [Double Chooz], *JHEP* **01** (2021), 190 doi:10.1007/JHEP01(2021)190 [arXiv:2007.13431 [hep-ex]].
- C. E. Aalseth *et al.* [DarkSide], *Eur. Phys. J. C* **81** (2021) no.2, 153 doi:10.1140/epjc/s10052-020-08801-2 [arXiv:2004.02024 [physics.ins-det]].
- C. E. Aalseth *et al.* [DarkSide-20k], *JINST* **15** (2020) no.02, P02024 doi:10.1088/1748-0221/15/02/P02024 [arXiv:2001.08106 [astro-ph.IM]].

- H. de Kerret *et al.* [Double Chooz], Nature Phys. **16** (2020) no.5, 558-564 doi:10.1038/s41567-020-0831-y [arXiv:1901.09445 [hep-ex]].
- H. de Kerret *et al.* [Double Chooz], JHEP **11** (2018), 053 doi:10.1007/JHEP11(2018)053 [arXiv:1802.08048 [hep-ex]].
- T. Abraho *et al.* [Double Chooz Collaboration] Novel event classification based on spectral analysis of scintillation waveforms in Double Chooz, Oct 11, 2017. 27 pp., arXiv:1710.04315 [physics.ins-det].
- P. Agnes *et al.* [DarkSide Collaboration], The Electronics, Trigger and Data Acquisition System for the Liquid Argon Time Projection Chamber of the DarkSide-50 Search for Dark Matter, Jul 31, 2017. 24 pp., arXiv:1707.09889 [physics.ins-det].
- B. Bottino *et al.* [DarkSide Collaboration], DarkSide, PoS NOW **2016**, 087 (2017).
- P. Agnes *et al.* [DarkSide Collaboration], The DarkSide-50 Experiment: a Liquid Argon Target for Dark Matter Particles, doi:10.1142/97898132245680057, 2017. 6 pp
- B. Bottino *et al.* [DarkSide Collaboration], The DarkSide experiment, Nuovo Cim. C **40**, no. 1, 52 (2017). doi:10.1393/ncc/i/2017-17052-3
- P. Agnes *et al.* [DarkSide Collaboration], The Electronics and Data Acquisition System for the DarkSide-50 Veto Detectors, Jun 10, 2016. 27 pp, Published in JINST 11 (2016) no.08, P08001, DOI: 10.1088/1748-0221/11/08/P08001, e-Print: arXiv:1604.06895 [physics.ins-det]
- Y. Abe *et al.* [Double Chooz Collaboration],
Characterization of the Spontaneous Light Emission of the PMTs used in the Double Chooz Experiment, Apr 23, 2016. 27 pp., Published in JINST 11 (2016) no.08, P08001, DOI: 10.1088/1748-0221/11/08/P08001, e-Print: arXiv:1604.06895 [physics.ins-det]
- P. Agnes *et al.* [DarkSide Collaboration], The DarkSide project, 2016, Published in JINST 11 (2016) no.02, C02051, DOI: 10.1088/1748-0221/11/02/C02051, Conference: C15-08-28 Proceedings
- P. Agnes *et al.* [DarkSide Collaboration],
The veto system of the DarkSide-50 experiment, Dec 24, 2015. 42 pp., Published in JINST 11 (2016) no.03, P03016, FERMILAB-PUB-15-585-AE-E, DOI: 10.1088/1748-0221/11/03/P03016, e-Print: arXiv:1512.07896 [physics.ins-det]
- Y. Abe *et al.* [Double Chooz Collaboration], Muon capture on light isotopes measured with the Double Chooz detector, Dec 23, 2015, 18pages, Published in Phys.Rev. C93 (2016) no.5, 054608, DOI: 10.1103/PhysRevC.93.054608, e-Print: arXiv:1512.07562 [nucl-ex]
- Y. Abe *et al.* [Double Chooz Collaboration], Measurement of θ_{13} in Double Chooz using neutron captures on hydrogen with novel background rejection techniques, Oct29, 2015., 26 pages, Published in JHEP 1601 (2016) 163, DOI: 10.1007/JHEP01(2016)163, e-Print: arXiv:1510.08937 [hep-ex]
- P. Agnes *et al.* [DarkSide Collaboration], Results from the first use of low radioactivity argon in a dark matter search, Oct 2, 2015., Published in Phys.Rev. D93 (2016) no.8, 081101, FERMILAB-PUB-15-436-AE-E, DOI: 10.1103/PhysRevD.93.081101, e-Print: arXiv:1510.00702 [astro-ph.CO].
- C. E. Aalseth *et al.* [DarkSide Collaboration], The DarkSide Multiton Detector for the Direct Dark Matter Search, Advances in High Energy Physics, vol. 2015, Article ID 541362, 8 pages, 2015. [doi:10.1155/2015/541362].
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Ortho-positronium observation in the Double Chooz Experiment, JHEP **1410**, 32 (2014) [arXiv:1407.6913 [physics.ins-det]].
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A compact ultra-clean system for deploying radioactive sources inside the KamLAND detector, Nucl. Instrum. Meth. A **769**, 88 (2014) [arXiv:1407.0413 [physics.ins-det]].
- Y. Abe *et al.* [Double Chooz Collaboration],
Improved measurements of the neutrino mixing angle θ_{13} with the Double Chooz detector, JHEP **1410**, 86 (2014) [arXiv:1406.7763 [hep-ex]].
- Y. Abe *et al.* [Double Chooz Collaboration],
Precision Muon Reconstruction in Double Chooz, Nucl. Inst. Meth. Phys. Res. A (2014) [arXiv:1405.6227 [physics.ins-det]].
- A. Gando *et al.* [KamLAND Collaboration],
7Be Solar Neutrino Measurement with KamLAND, arXiv:1405.6190 [hep-ex].

- Y. Abe *et al.* [Double Chooz Collaboration], Background-independent measurement of θ_{13} in Double Chooz, Phys. Lett. B **735**, 51 (2014) [arXiv:1401.5981 [hep-ex]].
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- Y. Abe *et al.* [Double Chooz Collaboration], Direct Measurement of Backgrounds using Reactor-Off Data in Double Chooz, Phys. Rev. D **87**, 011102 (2013) [arXiv:1210.3748 [hep-ex]].
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- Y. Abe *et al.* [Double Chooz Collaboration], Reactor electron antineutrino disappearance in the Double Chooz experiment, Phys. Rev. D **86**, 052008 (2012) [arXiv:1207.6632 [hep-ex]].
- Y. Abe *et al.* [DOUBLE-CHOOZ Collaboration], Indication for the disappearance of reactor electron antineutrinos in the Double Chooz experiment, Phys. Rev. Lett. **108**, 131801 (2012) [arXiv:1112.6353 [hep-ex]].
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- S. Abe *et al.* [KamLAND Collaboration], Phys. Rev. C **84**, 035804 (2011) [arXiv:1106.0861 [hep-ex]].
- A. Gando, Y. Gando, K. Ichimura, H. Ikeda, K. Inoue, Y. Kibe, Y. Kishimoto and M. Koga *et al.*, Astrophys. J. **745**, 193 (2012) [arXiv:1105.3516 [astro-ph.HE]].
- S. Abe *et al.* [KamLAND Collaboration], Phys. Rev. C **81**, 025807 (2010) [arXiv:0907.0066 [hep-ex]].
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- T. Araki *et al.* [KamLAND Collaboration], Phys. Rev. Lett. **96**, 101802 (2006) [hep-ex/0512059].
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- K. Eguchi *et al.* [KamLAND Collaboration], Phys. Rev. Lett. **92**, 071301 (2004) [hep-ex/0310047].
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