

# JENNIFER LORRAINE NIELSEN -JENNY

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*"The most beautiful thing we can experience is the mysterious." - Albert Einstein*

## EDUCATION

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<b>PhD</b>	<b>Philosophy of Science/Physics</b> University of Kansas Dissertation Topic: New Mechanism, Particle Physics PhD Candidacy Achieved 2022. Dissertation in preparation.	August 2018-
<b>MA</b>	<b>Philosophy of Science</b> Committee: Eileen Nutting, Armin Schulz, Michael B. Murray	May 2022
<b>MS</b>	<b>Physics</b> , University of Kansas Quantum Physics / Particle Physics / Quantum Computation Mentors: John Ralston, Siyuan Han, Michael Murray. MS Defense Paper: "Is Bit It?"	June 2017
<b>BS</b>	<b>Physics Math/Statistics</b> , University of Missouri – Kansas City Summa Cum Laude and Highest Departmental Honors	June 2010

## GRANTS, HONORS & AWARDS

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<b>Directing Research Fellowship. Center for Topological Physics.</b>	2025
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**Project: A Topological Theory of Everything.**

<b>IARI (Integrated Arts Research Initiative) Andrew Mellon Fellowship.</b>	2021-2022.
<b>KU Doctoral Grant.</b>	2018-2022
<b>FQXI (Foundational Questions Institute) Award / Grant</b> \$1000 monetary cash prize for winning essay in philosophy of science for "Is Bit It?"	2013
<b>KU Entry Fellowship in Physics</b> Tuition and expenses for work in physics	2012
<b>Summa Cum Laude, Physics BS w/ <i>Mathematics &amp; Statistics</i></b>	<b>2010</b>
<b>Chambliss Award for Undergraduate Astronomical Research</b> For research presented in 2011 AAS conference.	2011
<b>AMA – HOM-SIGMAA Prize in Mathematics</b>	2011
<b>Advanced Prize Ilus W. Davis Essay Competition</b>	2011
<b>UMKC SEARCH Scientific Research Prize – 1<sup>st</sup> Place</b>	2007
<b>Patricia Schatzkin Award - Most Outstanding Woman's Fellowship - UMKC</b>	2006
<b>Women's Club Going for Excellence Award</b>	2006
<b>Faculty Choice Award / Curator's Scholarship</b>	2007
<b>1st Place Ilus W. Davis Essay Competition</b>	2004
<b>Award for Outstanding Achievement in Spanish</b> (UMKC Spanish Program)	2004
<u><i>Other Scholarships</i></u>	
Don and Lucille Armacost Scholarship	2009
KF Cheng Scholarship, UMKC	2009
James M. Phillips Undergraduate Award in Physics	2008
REU Fellowship, University of Arkansas	2008
KL Cheng Undergraduate Award in Physics	2007

**RESEARCH EXPERIENCE**

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- Directing Research Fellow. Center for Topological Physics.** 2025-
- Dissertation** in Progress, University of Kansas 2021-Present  
 “Math over Mechanism: On the Limits of New Mechanism and the Supremacy of Mathematical Explanation in the Natural Sciences”
- Theoretical Physics Project.** High Energy Particle Physics. 2021-Present  
 Supervisor: Dr. Michael Murray, KU Particle Physics.  
 Simulations, modeling, theoretical particle physics project.  
 Paper in progress / to be submitted for publication.
- Graduate Research Assistant. Philosophy / I2S** 2023
- Graduate Teaching Assistant. Philosophy.** 2022
- Research Assistant, Integrated Arts Research Initiative** 2021-2022
- CERN Collaboration / “Collective Entanglements” Intern / Quantum Physics
  - Inquiry Collaborator / Team Intern / Assistant to Curator of Research
  - Paper: “Science as Performance” Spencer Museum of Art.
- Research Assistant, FOCI (Foundations of Cognition Initiative).** 2020-2021
- Data entry & organization
  - Research assistantship
  - Grant research
- University of Kansas Quantum Computing Lab, Lawrence KS** 2013-17  
**Research Assistant for Dr. Siyuan Han in consultation with Dr. John Ralston.**
- Josephson Junctions, Phase Qubit Operation, Superconductors, LG Inequalities, Measures of Entanglement.
  - Quantum Computing Group.
- UMKC Galaxy Evolution Group, Kansas City** 2009-11  
**Research Assistant for Dr. Daniel McIntosh.**
- Observational Astronomy at Kitt Peak, Arizona Observatory
  - Conference Paper / Award, Metallicity in Galaxies
  - Contributed to Merging Galaxy Catalog
- University of Arkansas Quantum Optics Lab, Fayetteville, AR.** 2008  
**REU Fellowship / Internship with Dr. Reeta Vyas.**
- Modeling of Hermite, Laguerre-Gaussian, and exotic (parabolic) modes of laser beams
- Independent Study, General and Special Relativity** 2008, 2013

**PRESENTATIONS & INVITED LECTURES**

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**Unfolding the Universe with Nielsen Topological Transcausal  
United Field Theory.** APEC Advanced Propulsion Engineering Conference.  
Invited Talk.

2025

**PhD Candidacy Prospectus Defense. “The Limits of Mechanism.”**

November 2022

**Qualifying Defense. “The Scope of New Mechanism”.**  
October 2021.

**“Science as Performance and Applied Philosophy at Spencer.” (Invited Speaker.)  
IARI Graduate Panel in Philosophy of Science.**

Invited talk. April 21, 2022 at the Commons at KU. Sponsored by the Spencer Museum of Art, the Integrated Arts Research Initiative, The Commons, the Department of Physics at KU, the Department of Mathematics at KU, and the Department of Philosophy at KU.

**Master’s Defense, Physics.** Quantum Information. (“Is Bit It?”). June 2017.

**“Nonlocal Universe.” Individual Presentation and Keynote Talk Participant.** SAND Conference, October 2017. <https://youtu.be/wK3-dxPJmv0>

**“Nonlocal Universe”. Curious Minds Invited Speaker / “Thought Leader.”**

Interviewed by Deepak Chopra. <https://www.youtube.com/watch?v=q4dGfW41GDM>

**University of Kansa, Philosophy of Science Talks**

- **“Science as Performance”** – Keynote Talk for Graduate Panel in Philosophy of Science, Collective Entanglements, Hall Center, KU

**University of Kansas, Physics Department, Seminar Talks:**

- “Entanglement, Entropy of Information, and Exploiting Quantum Chaos.” (April 2017)
- “Unreality and Acausality: The Leggett-Garg Inequalities.” (December 2015)
- “Exploiting Coherence and Entanglement.” (March 2015).
- “Approaches to Tripartite Entanglement.” (October 2014)
- “Traversable Wormholes.” (May 2013)
- “Watched Pots at the Quantum Level - The Quantum Zeno Effect.” (2013)
- “Beyond Bell.” (October 2013).

**January Meeting, Seattle, AAS.** Poster Presentation / Talk. “Age and Metallicity of...”  
Chambliss Award Winning Presentation. 2011.

**April MARAC Meting, Kansas City, MO. Feature Talk.** “Do Paired Galaxies Age Better?  
Mergers vs Lonely Singles.” 2011.

**DAMOP Conference.** Charlottesville, VA. (Participation, informal talk) May 2009.  
Presented undergraduate work in Quantum Optics with Nicolas Gisin and other quantum optics physicists on invitation of Nicolas Gisin.

**“Exotic Beam Simulation.” University of Arkansas.**

July 2008.

**PROFESSIONAL TRAINING**

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**Algorithmic Information Dynamics.** 2018  
Complexity Institute, Online.

**GTA Training.** University of Kansas. 2022

**LEADERSHIP & PROFESSIONAL AFFILIATIONS**

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**Student Senator. University of Kansas** 2021-2022

**Golden Key International Honors Society** 2010-

**APA Propulsions** **2023+**

**Private Foundation (Non-Disclosure Agreement).** 2019-

**GASP – Graduate Association of Philosophy Students at KU (Member)** 2018-

**President, Society of Physics Students, UMKC Chapter.** 2008-2010  
Developed outreach programs in astronomy at UMKC Observatory (“Night with the Stars”).  
Coordinated trips to Argonne National Labs, Fermi Lab, and UChicago. Obtained funding yearly via UMKC student government.

**Secretary, Society of Physics Students, UMKC Chapter.** 2006-2008  
Communication manager, outreach organizer, website developer. Obtained funding from student government.

**Fundamental Fyziks Group (2nd Generation)** Since High School  
Ongoing conversations with Jack Sarfatti, Nick Herbert, Hal Puthoff.

**PUBLICATIONS**

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2025. J.L. Nielsen. “The Topological United Field Theory on  $S^1 \rightarrow S^9 \rightarrow CP^4$ .”  
Forthcoming.  
<https://philpapers.org/rec/NIETTU>

2025. Finalization Stages / Near Completion. Redacted: A [Redacted] Solution to the [Nondisclosed] Mathematical Prize Problem [Nondisclosed]. (For Disclosure Upon Acceptance for Publication).

2024. J.L. Nielsen. “Math Over Mechanism: Introducing New Relational Structuralism.”  
<https://philpapers.org/rec/NIEDAF>

2023. J.L. Nielsen. “The Scope of New Mechanism.” Forthcoming.  
<https://philpapers.org/rec/NIETSO-11>

2023. JL Nielsen, Caelan Lovell, Abishai Mathai, Brendan McRoberts, James Bowen, Michael Murray. “Bremsstrahlung from the Most Rapid Deceleration Ever Seen.” Forthcoming.

2022. *Life, Liberty, and the Pursuit of Access*. Brousseau Exhibit, Spencer Museum of Art. Co-Author.

2018. Nielsen, Jennifer and Deepak Chopra. *Why the Physical Universe Needs Mental Glue*. San Francisco Chronicle.  
<https://www.sfgate.com/opinion/chopra/article/Why-the-Physical-Universe-Needs-Mental-Glue-7465399.php>

2018. Nielsen, Jennifer and Deepak Chopra. *How to See the Whole Universe: Nonlocality & Acausality*.  
<https://www.sfgate.com/opinion/chopra/article/How-to-See-the-Whole-Universe-Nonlocality-and-6924905.php>

2017. ME Weston, DH McIntosh, Jennifer Nielsen, et al. "Incidence of WISE-Selected Obscured AGNs in Major Mergers and Interactions from the SDSS". *Monthly Notices of the Royal Society*, (2017) 464:4

2015. Comment Predicting / Formulating Concept of Pseudo-Strong AI via Statistical LLMs. FQXI.

2012. Nielsen, Jennifer L. *The Heart is a Dustboard: Abu'l Wafa Al Buzjani, Dissection, Construction and the Dialogue between Art and Mathematics in Medieval Islam*. *Convergence Journal*. Sosland Journal. First Prize HOMSIGMAA paper award (History of Mathematics Special Interest Group of the Mathematical Association of America).

2011. Jennifer Nielsen, DH McIntosh, et al. *Age and Metallicity of Merging Galaxies and Merger Remnants in the SDSS*. *Bulletins of the AAS, Meeting #217*. (Winner of Chambliss Award for Research in Astronomy)

2011. Nielsen, Jennifer L, et al. *Spectroscopic Confirmation of the Ongoing Assembly of Giant Ellipticals*. <https://ui.adsabs.harvard.edu/abs/2011noao.prop..117M/abstract>

2011. Co-author with Andrew Cooper, DH McIntosh, et al. *The Role of Active Galactic Nuclei in the Major Merging Process*. AAS Poster meeting #217

2011. Co-author with AM Koekemoer, et al. *CANDELS: The Cosmic Assembly Near-Infrared Deep ExtraGalactic Legacy Survey: The Hubble Space Telescope Observations, Imaging Data Products, and Mosaics*. *The Astrophysical Journal Supplement Series*. 197 (2)

2011. Semester Short Term Project. Dr. Chiu Lab, KU. "Original Method of Transfer of Single Layer Graphene Using Cellulose Tape For Application to Fiber Optic Cable Tips." (Unpublished)

Nielsen, JL, et al. *Spectroscopic Confirmation of Ongoing Assembly of Giant Ellipticals*. NOAO proposal 2011

CANDELS: The Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey - The Hubble Space Telescope Observations, Imaging Data Products and Mosaics. Co-Author.

### **PROFESSIONAL SERVICE & OUTREACH**

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- “The Topological Transcausal Unified Field Theory.” Popular Science Talk.** 2025
- “Science by Number” – Radio/podcast host** for Mercury Broadcasting, California. 2016-2017
- Guest Speaker, Documentary Program “Nonlocal Universe”.** 2015  
Featured on “Curious Minds: Thought Leaders and Nobel Prize Winners”.
- Organizer / Sponsor / Teacher. Quantum Camp for Kids.** Lawrence Public Library. 2016  
Introduced pre-school and grade school age children to concepts from quantum physics.
- Conference Co-Organizer.** University of Kansas. April 2019  
Helped organize an undergraduate conference in philosophy.
- Outreach Coordinator, Society of Physics Students, UMKC Chapter.** 2006-2010  
Organized guest speakers, public outreach, tours / travel, events.
- Volunteer Educator/SPS Coordinator “Webelos on Wheels” event.** UMKC. 2006-2010
- Volunteer Science Demo Presenter** for touring high school students. 2008-201 Worked  
with Debbie Dilks, Engineering Department.
- Judged & Peer-Reviewed Articles for:**  
2019 Undergraduate Conference in Philosophy Essay Awards  
2010 Undergraduate Physics Papers Awards.
- High School Science Journalist.** KCXL. Local. “Wonderland”, Local Friday Morning Radio Show,  
Kansas City.

### **TEACHING**

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- Adjunct Instructor of Physics & Lab,** Neosho County Community College 2023
- Adjunct Instructor of Philosophy / Ethics.** Neosho County Community College 2023
- Ethics Instructor, University of Kansas** 2022-2023
- Haskell Indian Nations University, Lawrence, KS** 2016
- Adjunct Professor, Mathematics**
- Adjunct Professor, Science**
- Head Math Tutoring Instructor** 2020
- Adventure School of Kansas (ASK).** 2015-Present
- Founding Director / CEO.**
- Teacher / Tutor / Summer School Instructor

ESL for Chinese Students, Math, Chemistry, Physics, Logic & Ethics, Philosophy, Writing, Accessibility Coordinator.

**Mathematics & Science Instructor.** Summer 2021  
Simplicity Education Solutions (Remote.)  
Teaching High School Math, Algebra, College Algebra, AP level physics, AP level statistics.

**Academic Support Aide,** KU Accessibility, Mathematics Department.  
2020

**Math Tutor for Jayhawks.** Student Athlete Support Services KU. 2015  
• Duties: Tutored Calculus, Statistics, Analysis, English.

**College Math & Physics Instructor.** 2012-14  
Health Science Enrichment Institute, Lawrence, KS  
Statistics & Calculus Based Physics. Summer School sponsored by the Office of Diversity and Inclusion, KU Med.  
• Taught and developed curriculum, exams and quizzes for accelerated summer classes for diverse and underrepresented incoming freshman & sophomore pre-med students.  
• Months: May-August 2012; May-August 2013, May-August 2014

**Laboratory Instructor / Teaching Assistant.**  
KU Physics Department. 2012-15  
Taught and graded introductory physics labs for college and engineering physics. 2-3 classes per semester.

Undergraduate Laboratory Teaching Assistant, UMKC, Physics. 2006-10  
Assisted and substituted for graduate TA's in UMKC's physics department.  
Tutored undergraduates.

## PROFESSIONAL EXPERIENCE

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<b>Staff Scientist / Professional Science Writer.</b> Supervisor: Dr. Sabine Hossenfelder	2023-2024
<b>Engineering Physicist / Advanced Propulsion Dynamicist.</b> <b>Private Foundation.</b>	2022- Present
<b>Tutor.com Online Tutor</b> Tutored Math, Physics, Chemistry. January-September 2010	2010-2011
<b>Social Media Manager.</b> Phoenix Woodworking.	2018-2019
<b>Social Media Manager (NDA. Sports Company)</b>	2015-2016
<b>Paralegal</b> William ("Bill") O'Sullivan and Todd A. Nielsen Law Firms	2003-09

## COMMUNITY SERVICE & VOLUNTEERING

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<b>Justice Matters.</b> (DART - Direct Action & Research Training Center.) Lawrence, KS. Team Leader. (Advocacy and research towards community mental health, homelessness resources, restorative practices, elder care reform)	2021-
St John the Evangelist: Visit shut-in, elderly, hospitalized congregation members for company and conversation.	2021-
Social Service League of Kansas. (Thrift Shop / Community Aid.) Volunteer.	2012-2013
Bengal Tiger Assistant Care-Taker, Cedar Cove Wildlife Center.	2006

## TECHNICAL SKILLS & LANGUAGES

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### Technical Skills:

- **Programming:** Python, C++, MATLAB, Mathematica, Mathcad, FORTRAN, etc
- **AI Advanced: Grok/ChatGPT/Claude/Perplexity, R-Studio, SPSS**
- **Applications:** RStudio, SPSS, MS Office, Excel, Adobe Acrobat, Google Suite, SQL
- **AI:** Neural Networking know-how, ChatGPT 3-4 Expert, Bard
- **Audio / Video:** Recording, Editing (Audacity, Vegas Video, etc)
- **Operating Systems:** Mac, Windows, Linux, Android/IOS

### Languages:

- **English:** Native Language
- **Latin & Medieval Latin:** Intermediate
- **Spanish:** Intermediate
- **German, Chinese, French, Italian, German, Hindi, Lakota:** Novice
  - *(Quick study with languages given minimal exposure)*

## **REFERENCES**

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### *Research:*

- Jack Sarfatti. Mentor. [jacksarfatti@icloud.com](mailto:jacksarfatti@icloud.com)
- Michael Murray. Professor. Research Supervisor. ( [MJMurray@KU.edu](mailto:MJMurray@KU.edu))
- John Ralston. KU Professor of Physics. MS Committee Co-Chair. ([Ralston@KU.edu](mailto:Ralston@KU.edu))
- James Bowen, Professor at Baker, Research Associate KU, Colleague: [j294b619@ku.edu](mailto:j294b619@ku.edu)
- Sabine Hossenfelder, Physicist. [Sabine.Hossenfelder@gmail.com](mailto:Sabine.Hossenfelder@gmail.com)
- Deepak Chopra. Colleague. Contact for further information.
- Devanshi Khetawat. Clinical Psychologist, Colleague. [khetawatdevanshi@gmail.com](mailto:khetawatdevanshi@gmail.com)

### *Teaching:*

- Maria Alonso-Luaces. Director of Academic, Professional and Workforce Development, Office of Diversity and Inclusion, KU Med. Supervisor. ([MAlonsoLuaces@kumc.edu](mailto:MAlonsoLuaces@kumc.edu))
- Gabe Begaye, Mathematics Chair / Supervisor, Haskell Indian Nations University. ([GBegaye@Haskell.edu](mailto:GBegaye@Haskell.edu))

*Additional professional references and character references available upon request.*