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Abstracts

Nuclear Physics Applications Through the Lens of Undergraduate Research



—Tristan Anderson

Whether you know it or not, nuclear-based technologies are pervasive in our daily lives. Despite the field's politicized history, nuclear physics is a great thing—and its non-weaponized applications extend harmlessly and helpfully beyond the walls of a laboratory. In this commentary, I give an overview of a subfield in nuclear physics that investigates the role of nuclear spin within the nuclear medium. I then branch into a discussion of some of my research on spin that I have done in the University of New Hampshire's Polarized Target Group and relate my work's application to medical technologies (external to UNH). From there, I explore other applications of nuclear physics in hopes of motivating future generations of researchers or sparking interest in a field that is easily misconceived.

The Effects of Instagram's Fitspiration on the Health and Well-Being of Women



—Ciara Devereaux and Grace McGrew



Despite social media's benefits, such as connecting millions of users all over the world, apps like Instagram have been linked to detrimental consequences for the mental health and self-esteem of their users. Ironically, even content designed to promote positivity and well-being on the platform, such as "fitspiration," may be associated with undesirable consequences for users. Our goal was to gain a greater understanding of how users perceive different types of fitspiration posts and how exposure to these different types of fitspiration content are associated with changes in users' mental health and well-being. Fifty-one females were surveyed each day over the course of a week about their Instagram usage, their personal Instagram feed content, and their self-esteem and mental health symptoms. We found that viewing fitspiration images of food was associated with greater reported motivation to eat a healthy meal and that viewing images of someone working out was associated with greater reported motivation to go to the gym. However, we also found that individuals reported significantly lower self-esteem on days where they were exposed to more before-and-after

fitspiration images or sexually suggestive fitspiration images. These findings suggest that daily exposure to fitspiration content on Instagram may have some desired impacts but may also have unintended negative consequences.



Why Is Our Politics So Polarized? The New Hampshire Political System and the Rural/Urban Split

—Ben Mackillop

During the summer of 2020, I had the opportunity to conduct research through the University of New Hampshire's Research Experience and Apprenticeship Program (REAP) under faculty mentor Professor Dante Scala. In this commentary I give a brief introduction to the research I conducted on political polarization within the New Hampshire state legislature. I hypothesized that the rural/urban divide for New Hampshire citizens, and thus their state legislatures, is a key contributor to political polarization within state politics. I analyzed voting patterns on multiple, diverse bills from the 2019-2020 legislative session, comparing urban legislatures to their rural peers. I anticipated that rural state legislators would be more likely than urban legislators to vote against the majority opinion of their party if they felt it would help their constituents. I expected this to be especially the case on polarizing issues where different experiences between those in rural areas and those in urban areas affect their opinions. However, I found the opposite to be true. I then conducted multiple interviews with current state legislators to understand better why they behave the way they do. In closing, this commentary discusses political polarization as a broader idea and gives some insight into how polarization can improve.



Learning to Code Human Behavior

—Jennika Mannesto

By participating in two research projects in the field of human development and family studies at the University of New Hampshire, I have gained lifelong observational skills that will be valuable in my future teaching career. Through the Mommy and Me project I have become proficient in using the Q-sort method to code observable behavior. Through Project Advancing Children's Museum Engagement (Project ACME) I used videotaped interactions of families in a children's museum to learn about the types of play children engaged in and how that related to gender. I created my own coding scheme for this project to code play behavior. Creating my own coding scheme proved to include a lot of trial and error to accurately portray what I was looking to record. At the end of this process, I had findings that suggested that girls spent more time engaged in imaginary play than did boys. Using knowledge gained through my research, such as keen observational skills and the results of my study, my teaching practice will be better informed.



Becoming a Researcher During the COVID-19 Pandemic

—Samuel Mercer

The COVID-19 pandemic brought about abrupt change to traditional research approaches for undergraduate research. As a first-year undergraduate researcher who worked through the University of New Hampshire Innovation Scholars Program and through the Research Experience and Apprenticeship Program (REAP) for my projects *Wireless Data Processing System for IoT-Enabled Devices* and the *Direct Conversion of Methane to Methanol Over Gold Catalysts*, I learned how to adapt myself to optimize my time spent away from the physical laboratory. By setting up my own home equipment and by using the virtual medium, I conversed with research groups, tinkered with homemade projects prototypes, and thoroughly reviewed literature, allowing me to deeply familiarize myself with theory and experimental data to build hypotheses that I could later test in the laboratory. Such experiences showed me that research is versatile and constantly adapts between the disciplines. By overcoming the obstacles created by the pandemic, I learned skills that transformed my perspective toward research.



Extracting Bankfull Widths and Stream Slopes from New England Rivers

—Daniel J. Okuniewicz Jr.

The chief characteristic of this project was extracting measurements for New England rivers—specifically, bankfull widths and stream slopes—using high-resolution elevation data collected with remote-sensing technology in order to help increase the fidelity of remote-sensing measurements to field measurements. Remote sensing, such as the high-resolution lidar used in this study, is a highly useful emerging technology. Extracted river measurements are useful for determining transport characteristics of sediments and pollutants, gas exchange rates with the atmosphere, and flood risk. For this project I selected study sites from streams and rivers in the New England region; at those sites I compared bankfull widths extracted from remote sensing elevation data to previously collected field measurements in order to validate the remote sensing data. The results of this project indicate that remote sensing data is useful, but not yet up to par with field measurements at individual measurement locations. However, remote sensing dramatically increases the speed and scale of measuring river characteristics along the entire river length.



Occupational Therapy via Telehealth for Families Raising Children with Autism

—Carli Rita

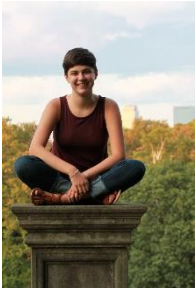
Family health is an emerging practice area in occupational therapy that has potential to improve overall family health and participation in daily activities. Families raising children with autism may experience challenges that families raising typically developing children may not experience, and occupational therapy has been shown to improve both child and family outcomes. This study seeks to determine the preliminary effectiveness of the *Healthy Families Flourish Program*, a ten-session occupational therapy intervention program delivered via telehealth to support families raising school-aged children with autism. Four New Hampshire families were recruited for participation in this study. Weekly sessions took place and families collaborated with us to create goals and employ strategies to reach those goals. Quantitative measures were employed pre- and post-intervention to determine preliminary effectiveness of the program. Results show that the intervention program was successful in creating progress toward family goals as well as improving areas of family communication, engagement, and cohesion. Participant testimonials suggest that programs such as the *Healthy Families Flourish Program* have potential to create significant change for families raising children with autism.



LGBTQ+ Oral History: The Power of Community and Individual Stories

—Aliya Sarris

During the summer of 2020, I had the amazing opportunity to participate in the Research Experience and Apprenticeship Program (REAP) at the University of New Hampshire under the mentorship of Professor Holly Cashman. In this commentary, I explain the concept of oral history, a research method that entails the collection and study of recorded interviews with those who have personal experiences within the framework of larger historical events. The project specifically focused on the oral histories of older LGBTQ+ folks living in the Seacoast area of New Hampshire. The goal was to collect information regarding their experiences in New Hampshire both before and after the Stonewall Riot of 1969, known as a catalyst of the LGBTQ+ community's activism. I discuss the experiences of three interviewees that include themes such as discovering community, exploring self-acceptance, and finding lost love. I also explain the concept and significance of researcher positionality, or the researcher's relation to the social and/or political context of the project, in qualitative research. Through the oral history method, I was able to discover the importance of community engagement and the power of each interviewee's individual story.



Refugee Composers of the Twentieth Century: The Impact of Displacement on Musical Identity During World War II

—Kylie Smith

Kurt Weill, Bela Bartok, and Arnold Schoenberg are all influential composers of the twentieth century who immigrated to the United States to escape persecution during World War II. Their refugee experience, however, is not often taken into account when studying their musical works. This project examines how their immigration affected their compositional output, and how the pressures of the time shaped them as composers. This project aims to bring light to an underappreciated factor of these composers' lives and inform the way we support refugee musicians in the future.



Understanding Interpersonal Trust and Task-Unrelated Thought Through Computer-Mediated Health Conversations

—Tyler Stetson

The COVID-19 pandemic caused many healthcare professionals to transition to digital telehealth platforms for patient visits, making interpersonal trust more difficult to achieve. My study examined the relationship between task-unrelated thought (TUT), likability, and interpersonal trust in medically related conversations. Two questions were asked for this study: (1) Is the level of trust and likability between two chat participants related to the frequency of TUT during computer mediated conversation? and (2) What features of language are associated with TUT, trust, and likability in a computer-mediated telehealth environment? Participants chatted online via an instant message platform about personal remedies for the common cold while also responding to pop-up, self-caught mind wandering probes that occurred at random frequency. Natural language processing tools were used to analyze the text from chat transcripts for sentiment, social dynamics, and emotional affect expressed during the chat. Participants evaluated their level of TUT as 3.55 on a scale of 1 to 7, with more TUT resulting in greater negative affect. These findings advocate that TUT is prevalent in computer-mediated health conversations.



Sexuality and Regional Dialects in Southern New Hampshire

—Hayden Stinson

Social identity is complex and multifaceted. While census-like data has an important place in sociological research, everyone interacts with their social categorization uniquely. To bring this into focus in the field of linguistics, I conducted research on the relationship between regional dialects and gay identity. Using data from interviews that I conducted with two twenty-two-year-old gay men from southern New Hampshire, I followed in a line of research that focuses on the performative nature of social identity. I reached two particularly interesting findings. First, the participants used a “gayer-sounding” /s/ sound in a reading task than in a question-and-answer task. Second, the participants, both of whom grew up in and live in southern New Hampshire, used vowel patterns associated with New York City that aren’t associated with any group in southern New Hampshire. While the former is likely due to the association of gay-sounding speech with ideologies on proper speech and the second likely due to an idea that the participants would be safer expressing their gay identity in New York than they are in New Hampshire, both show that the expression of social identity is a complex, multi-layered phenomenon.