

**Acknowledgments  
in Scientific  
Publications and  
Presentations** *and Posters*

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**First, get it spelled correctly...**

**There is no *e* following the *g* in the  
U.S. English spelling of *acknowledgment***

**(Don't believe me?—look at the acknowledgment  
page of any book published by a U.S. publisher)**

**British English spells it with the “*e*,” but we colonials  
have our own rules**

**Some wimpy dictionaries may accord “*acknowledgement*”  
alternative status, but we have higher standards in physics**

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**The *acknowledgment* is a formal printed statement that recognizes individuals and institutions that contributed to the work being reported**

**Contributions to the research should be acknowledged**

**Non-research contributions are generally not appropriate for acknowledgment in a scientific paper but may be in a thesis**

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**Acknowledge research contributions by people other than the authors**

**Persons who gave scientific guidance, participated in discussions, or shared unpublished results**

**Persons who provided samples or equipment**

**Assistants who helped do the work**

**Technicians at user facilities or labs**

**Make it a simple statement of thanks, not a testimonial or dedication**

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**Do not acknowledge non-science contributors**

**Persons who helped prepare the manuscript  
(e.g., typists, graphic artists)**

**Persons who provided encouragement or  
moral support (e.g., Mom)**

**Persons who provided non-technical services  
(e.g., grant coordinators, secretaries,  
purchasing agents)**

**These individuals might be acknowledged in a  
thesis, but not in a journal article, presentation,  
or poster**

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**Acknowledge by name only**

**Do not use titles, honorifics, positions, or  
awards**

**Paul G. Kwiat**

**NOT**

**Professor Paul G. Kwiat,  
Bardeen Chair in Physics**

**Anthony J. Leggett**

**NOT**

**Sir Dr. A.J. Leggett, Nobel Laureate**

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**Always acknowledge financial support of the research—always**

**Give the name of the funding agency and grant or contract number**

**Do not mention any title that came with the funds**

**A.C. acknowledges support from the Lorella Jones Summer Research Fund**

**NOT**

**A.C. was a Lorella Jones Summer Research Fellow**

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**Funding agency acknowledgments**

**An acknowledgment of NSF support and a disclaimer must appear in publications (including World Wide Web sites) of any material, whether copyrighted or not, based on or developed under NSF-supported projects**

**“This material is based upon work supported by the National Science Foundation under Grant No. \_\_\_\_.”**

**In the case of multiple grants, it may be permissible to name only the funding agency**

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**NSF support also must be orally acknowledged during all news media interviews, including popular media such as radio, television and news magazines**

***Except for* articles or papers published in scientific, technical or professional journals, the following disclaimer must also be included:**

**“Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.”**

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## **What about logos?**

**Federal funding agencies may allow you to use their logos, but obtain a high-resolution image and follow their guidelines**

**The University has explicit rules about the use of the I-mark**

**Companies are aggressive about protecting their brands and trademarks; just because you can grab a logo off a website does *not* mean you can use it with impunity**



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## What about logos?

### Rules for using the NSF logo:

<http://www.nsf.gov/policies/logos.jsp>

### Rules for using the University of Illinois at Urbana-Champaign logo:

<http://identitystandards.illinois.edu/graphicstandardsmanual/logoguidelines.html>







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## Where to put the acknowledgments?

**Temperature-Dependent Fliprate of Artificial Spin Ice**  
 Isaac Carrasquillo, Yuyang Lao, and Peter Schiffer  
 Department of Physics, University of Illinois at Urbana-Champaign


**Goal**

Find a model for the flipping behavior of artificial spin ice at varying temperature

**Artificial Spin Ice**

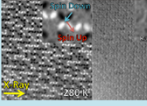
- Manually fabricated nanometer size, single domain island arrays used to analyze magnetic frustration
- Dimensions 170 nm by 470 nm with a thickness of 3 nm
- Composed of permalloy, an 20% iron and 80% nickel alloy

**Tetris Lattice**



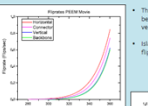
- Similar to square lattice with 3/8 of the islands removed
- Used to study the one-dimensional Ising Model of the staircase islands
- Islands behave differently based on how many nearest neighbors exist

**Photoemission Electron Microscopy**



- Record electrons emitted from a sample in response to the absorption of incoming radiation
- Extract the relative direction of the magnetization of each island with respect to the incoming X-ray
- The islands appear black or white depending on the direction of island's magnetization
- Imaged 320 frames of in the temperature range from 280 K to 380 K

**Fits to Fliprate Model**



- The horizontal staircase is the first to become active, followed by connector, vertical, and backbone
- Islands with more nearest neighbors flipped at higher T

**Active Island Model**

**Master Carlo Simulation**

- Active islands flip during exposure time, in each frame
- Matches an average over time with an average over space, experimental data
- The time,  $t$ , in 0.0001 s, represents the behavior of one island
- Random flip,  $f(T)$ , distributed and tested using N random samplings

$$Error = \sum \left( \frac{N_{array}(T)}{N} - f_{array}(T) \right)^2$$

$$\frac{1}{f(T)} = \tau(T) = \tau_0 \left( \frac{KV}{e^k k_B T} \right)$$

**Niel Relaxation Theory**

- Describes the mean transition time between energy states for various temperatures
- Depends on energy barrier KV between two spin states and attempt period  $\tau_0$
- Describes a free dipole moment of a superparamagnetic material

**Future Work**

- Energy barriers were between 23.7eV and 33.6eV
- Attempt periods were between  $8.0 \times 10^{-12}$  and  $1.1 \times 10^{-11}$  s
- Energy barriers were higher for islands that began flipping at higher T

**Acknowledgments**

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## An alternative placement

**Machine Learning and Cosmological Simulations**  
Harshil M. Kamdar, Matthew J. Turk, Robert J. Brunner  
University of Illinois at Urbana-Champaign

**Introduction & Motivations**

- What is the influence of dark matter (DM) structure on galaxy evolution?
- Can we study this relationship by using machine learning (ML)?
- Current galaxy formation techniques are expensive to run, however dark matter only simulations are not.
- ML offers a solid framework to mimic hydrodynamical simulations for three reasons: computational efficiency, relative simplicity, and ability to learn highly complex relationships.

Figure 1: Dark matter density field (top) resulting in galaxy formation (right) in the Dark Sky simulation (left) using ML.

**Simulating a Simulation?**

- ML algorithms employed in our analysis: **extremely randomized trees and random forests**.
- The ML algorithms are trained on the **Illustris simulation** (matter + dark matter) and applied to the **Dark Sky simulation** (dark matter).

**Lighting up Dark Sky**

**Conclusions**

- The ML simulated galaxies in the Dark Sky simulation are numerically, physically, and statistically robust.
- Moreover, the ML simulated galaxies abide by certain fundamental observational constraints, further boosting confidence in our approach.
- ML techniques approximately mimic a full-blown hydrodynamical simulation a DM only simulation **only an orders of magnitude faster**.

**Future Work**

- Creating full mock galaxy catalogs using ML, with different cosmological parameters to compare with observations in the matter of minutes.
- Comparing different hydrodynamical simulation codes to see how different physical parameters and evolution techniques affect structure formation in a hydrodynamical simulation.

**References**

- Kamdar H, Turk M, Brunner R, 2015a, MNRAS (Accepted)
- Kamdar H, Turk M, Brunner R, 2015b, MNRAS (Submitted)
- Kamdar H, Turk M, Brunner R, 2015c, MNRAS (in press)

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## To Recap:

- Get it spelled correctly
- Acknowledge people who contributed to the scientific work but are not co-authors
- Keep it a simple expression of thanks, not a testimonial
- Acknowledge the use of special facilities
- ALWAYS** acknowledge financial support;
- conform to funder guidelines for language
- Check with the funder about use of logos

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<http://physics.illinois.edu/people/Celia/>

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