

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

Celia M. Elliott
Department of Physics
University of Illinois
cmelliot@illinois.edu

© 2020 The Board of Trustees of the University of Illinois
All rights reserved

1

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**

2

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

3

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Persons who gave scientific guidance, participated in discussions, or shared unpublished results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

4

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**

5

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

6

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

7

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

8

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 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.”

9

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



10

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>)







11

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

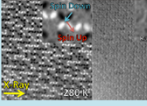
- Manually fabricated nanometer size, single domain island arrays used to analyze magnetic frustration
- Dimensions 170 nm by 470 nm with a thickness of 3 nm
- Composed of permalloy, an 20% iron and 80% nickel alloy

Tetris Lattice



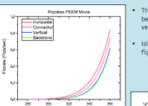
- Similar to square lattice with 3/8 of the islands removed
- Used to study the one-dimensional Ising Model of the staircase islands
- Islands behave differently based on how many nearest neighbors exist

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 Circle 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 τ_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 8.0×10^{-12} and 1.1×10^{-11} s
- Energy barriers were higher for islands that began flipping at higher T

Acknowledgments

IC would like to thank Yuyang Lao, Ian Gilbert, and Peter Schiffer. IC thanks Andreas Scholl and the Lawrence Berkeley National Lab Advanced Light Source (ALS) for use of the PEEM--XMCD systems. IC thanks Liam O'Brien, Justin D. Watts, Michael Manno, and Chris Leighton from University of Minnesota for creating the samples. This material is based upon work supported by the National Science Foundation under Grant No. DMR--1341793. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Smaller font

At the bottom

Along the right side

12

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 (left) resulting in the galaxy simulation (right) 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 in a DM-only simulation **only in 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)

HMK and RJB are supported by NSF grant AST-131415. HMK is supported by the Moore Foundation grant GBMF4561. HMK is also supported by the LAS Honors Council, NCSA/Blue Waters, and OFSA at UIUC.

Smaller font
At the bottom
Along the right side

HMK and RJB are supported by NSF grant AST-131415. HMK is supported by the Moore Foundation grant GBMF4561. HMK is also supported by the LAS Honors Council, NCSA/Blue Waters, and OFSA at the University of Illinois.

13

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

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

14