

# Ann Nelson: Brilliant Physicist and Advocate for Diversity



# Ann's Research

- Ann's research spanned every corner of Physics Beyond the Standard Model.

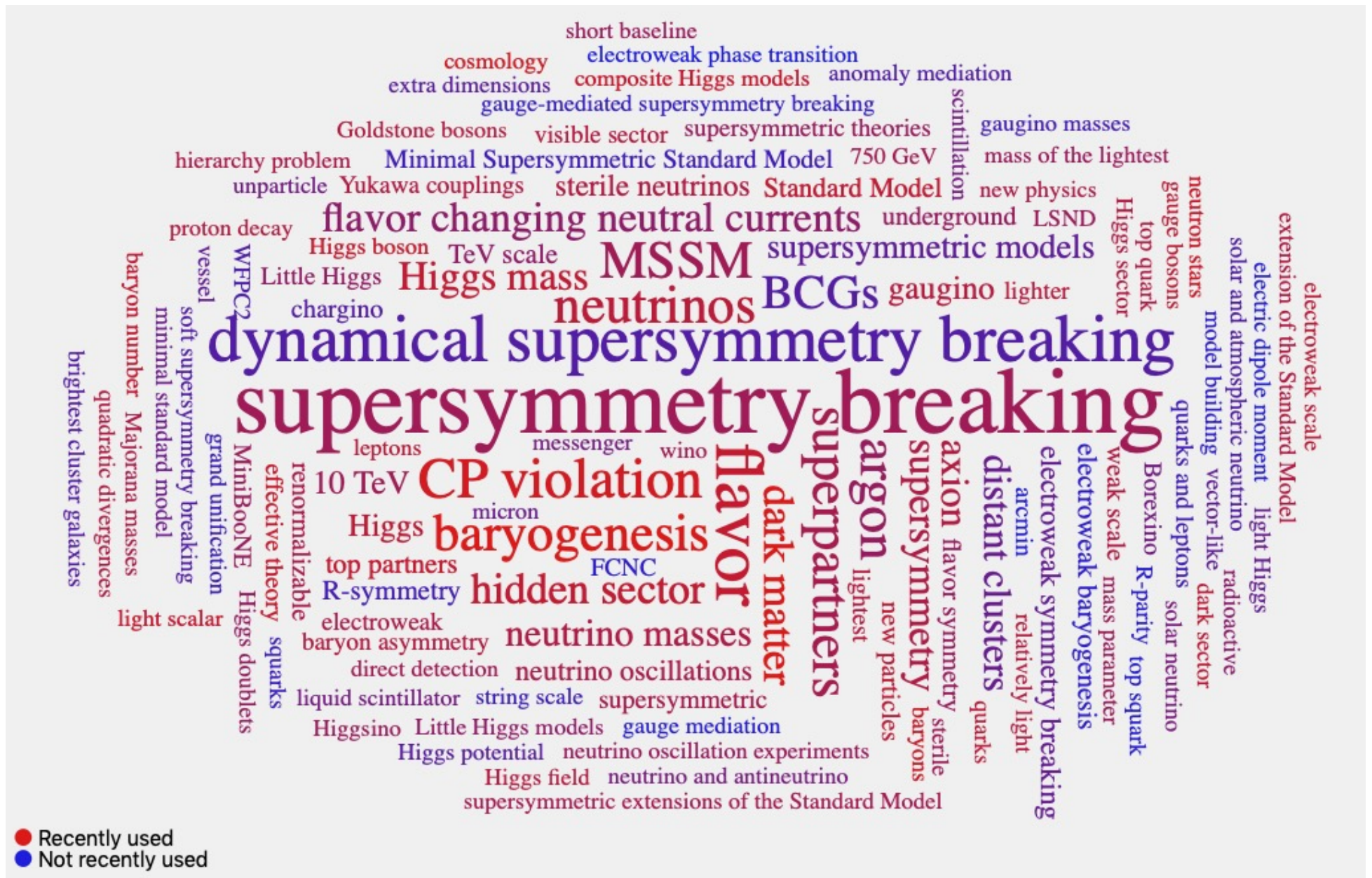
“It might be easier to try to list what Ann *didn't* make a major contribution to.”

—Matt Reece (Associate Professor, Harvard)

- Never content to rehash the old, her research forged new paths. Many of us have enjoyed following the trails that she blazed for us.
- Ann taught me the important lesson that *crazy* models are *interesting* models. They often offer more for us to learn from than sane models do, and they have value even when they are not realized in Nature.
- The courage that she had to focus on the physics and ignore the sociology epitomizes for me what it means to be a good scientist.
- Speaking as someone who has spent much of the last 10 years of my life writing down dark matter models for the LHC, I was genuinely looking forward to learning something new from her theory overview talk today.



# Ann's Research



- Discussing physics with Ann was always enlightening. Her brilliance was awe-inspiring, and she always immediately saw to the essence of the physics.
- At the same time, she seemed to have infinite patience, willing to stamp out misconceptions no matter how much time it took to accomplish.
- Talking about physics with Ann was fun! Many theorists see constructing a viable model as a mine field to be survived. With Ann, it was an obstacle course to be enjoyed, with every challenge a chance to learn something new.
- I will miss the experience of sitting in a large auditorium like this one, and having to strain from across the room to hear her ask a question in her calm and measured voice. The question (sometimes more than the answer...) was always very illuminating.
- Many people have mentioned that talking to Ann when they were junior physicists helped them get over feeling like an imposter. I certainly benefited from that experience. I think a large part of it was that Ann annihilated imposter syndrome because she approached every discussion, no matter with whom, under the assumption that the person that she was speaking with was not an imposter.

# Advocacy for Inclusion

## Commentary: Diversity in physics: Are you part of the problem?

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Many leading academic physics departments have no underrepresented-minority faculty members. My own department at the University of Washington has never had an African American tenure-track faculty member. That state of affairs is taken for granted, but it should be regarded as shameful.

At Stanford University in the late 1980s, I was the first tenure-track woman hired in physics; the applied physics department and SLAC still had none. Yet my appointment (granted to increase diversity in the physics department) immediately made the percentage of female physics faculty at Stanford well above the national average. At that time, having no women in





**ALL OF US.** Watercolor and pencil on paper (2000). Warren W. Buck, University of Washington, Bothell.

“Let me be clear. If your career is established and you are not making an explicit and continual effort to encourage, mentor, and support all young physicists, to create a welcoming climate in your department, and to promote the hiring of diverse faculty members, you are part of the problem.”

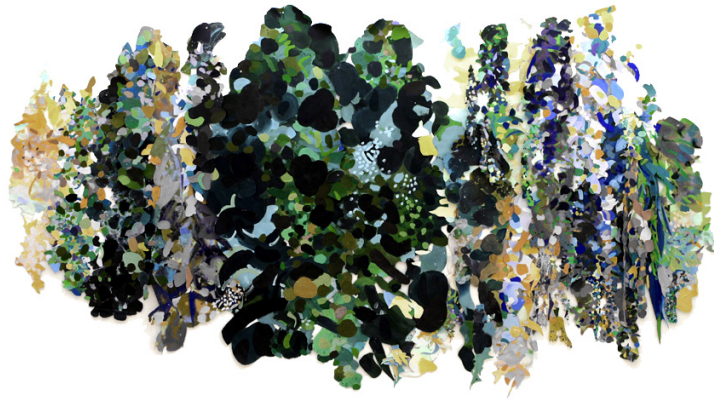
— Ann Nelson, *Physics Today* (2017)

# Palestinian Advanced Physics School 2017

Birzeit University

July 9 – 13, 2017

Lectures for Masters students in topics in contemporary physics.



Condensed Matter Physics **David Tong, U. of Cambridge**  
Cosmology **Ann Nelson, U. of Washington**  
Science at SESAME **Giorgio Paolucci, SESAME**

In 2017, Ann was one of three physicists who visited Birzeit University in Palestine to give lectures about cosmology to students, many of whom would otherwise have no opportunity to be exposed to advanced topics in Physics.

Interested students apply by June 10<sup>th</sup> at [www.scientists4palestine.com](http://www.scientists4palestine.com)

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anonymous donors, and  
nearly two hundred small  
donations.





# Mentoring



“I remember that early in my time as her postdoctoral supervisee at the University of Washington, Ann told me that to be happy as a particle phenomenologist, I had to be okay with something like mounting a moose head on the wall and putting a purple scarf on it and not worrying about why it was wearing a purple scarf. I recounted this story to some colleagues at Aspen just two months ago because I felt it was so characteristic of Ann but also incredibly freeing. Ann was telling me to just think about what physics could be — and to focus on the problem at hand rather than trying to solve everything all at once”

—Chanda Prescod Weinstein (Assistant Professor, New Hampshire)



"The first time I met her was a formative experience for me. I was a grad student at the time. Coming from the gender backwaters of Israel, I always thought that all the talk about role models at Stanford was complete bullshit. Then one day Ann came to give a seminar at SLAC (about electroweak baryogenesis), and sitting at her talk I suddenly found myself crying (I really had to fight the tears). For the first time in my life I saw someone who looked like a possible extrapolation of myself in a few years, and for the first time in my life it dawned on me that it would be possible for me to become a "real physicist". It dawned on me that before that time I never thought about becoming a physics professor as a realistic option, because none of the physics professors were young women. The reason it was so moving is that it was such a great seminar, and she was so smart and clearly so well-respected.”

—Yael Shadmi (Professor, The Technion)





“Anyone will tell you that Ann was brilliant. Models and ideas would flash through her mind. As you sat there they would be picked up or discarded for various reasons. When you could keep up it was fantastically fun. Fun. I think this is perhaps the hardest thing to convey for me—just how much she enjoyed physics.”

—Neal Weiner (Professor NYU)



“To me Ann was an incredible physicist, collaborator, mentor and friend. I owe her so much in so many ways I cannot being to recount here. I admired not only her brilliance when doing physics, but her patience, kindness and pure excitement about life and nature. In a world often filled with ego, anger and pettiness, Ann showed me that one can do great things while remaining a great person.”

—Gilly Elor (Postdoc, UW)





"Ann was a genius of uncommon grace and humanity. Everyone talks about her brilliance in theoretical physics. This is obviously true. I marvel at some of the things she has said. However, her humanity equals—and even surpasses—her physics acumen. She broke barriers for me.

I will miss regularly talking to my friend. I will miss the intellectual exchange. I am so grateful that I got to spend the time I could with her."

—Devin Walker (Assistant Prof, Dartmouth)

I first started working with Ann Nelson when I moved to the University of Washington in 2013. It was immediately obvious that she was a shockingly talented physicist as well as a profoundly kind human being. Any time I was confused about a physics question, I could count on her to patiently and succinctly explain it in just the right way for me to understand. She was a wonderful mentor and had an enormous impact on my way of doing physics. I will always be grateful for that. In many ways she drove the entire particle physics field forward, influencing the way we thought through her creative and fearless model building. This was a joy for me to witness.

—David McKeen (Scientist, TRIUMF)





“She was very generous and honest with praise. In a field filled with big egos, hearing a great physicist say “Good job!” is a rare and welcome gesture, especially for a graduate student. When Ann saw a problem, she wanted to solve it. This extended to the struggles of her students as well. If I was at a bad place, academic or personal, Ann would work with me to find solutions, instead of leaving me stranded or worse.”

—Seyda Ipek (Postdoc, UCI)



“Ann was a superb mentor and only over the last few years have some of the lessons she was teaching me (implicitly, by her example) fully sunk in; I am sure there are others that I have still yet to process.

When you realize how big her brain is, it's amazing there's no room in there for an ego.”

—Paddy Fox (Senior Scientist, Fermilab)





“One of the best advice/jokes of hers I will always remember was: “If you want to come up with something new, don’t read too much — you’ll just end up coming back to what you have read. Also don’t read too little, then you just reinvent the wheel.” which was followed by a grin. The lesson I took from that is that Ann is willing to admit she does not know everything.”

—Jakub Scholtz (Postdoc, IPPP Durham)



Aspen CO, 2018







“She is the gentlest person I have ever been afraid of. She taught me to be a physicist and I am eternally grateful.”

— David E. Kaplan (Professor, Johns Hopkins)



“Ann taught me that model building is like playing sudoku.”

— Akshay Ghalsasi (Postdoc, UCSC)







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8 Aug 2019 in [People & History](#)

## Ann Nelson (1958–2019)

Students and colleagues describe the impact of the theoretical particle physicist on their careers.

Physics Today

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Physics Today is collecting remembrances at  
<https://physicstoday.scitation.org/doi/10.1063/PT.6.4.20190808a/full/>



# Students :

This is Ann as a grad student.  
She would have told you: it is OK to  
feel sad, but channel it into something positive

