

## Once a physicist ... FREE

Earl Blodgett



*Physics Today* **75** (6), 11–12 (2022);

<https://doi.org/10.1063/PT.3.5010>



View  
Online



Export  
Citation

CrossMark

thanks to digital dissemination and popular accounts of their scientific work, and our students and early-career scientists always love to meet members of the community they already admire. For several years I helped organize the Abdus Salam Memorial Lecture Series, which brings scientists of global preeminence to speak about contemporary physics at my university in Lahore.

The encounters can also be purely digital, an experience that has become mainstream since the onset of COVID-19. For example, my university's mathematics department routinely organizes talks as part of the digital John Conway Spirited Mathematics Seminar Series, which brings the best mathematicians from around the world to speak in a virtual setting with anyone who would like to attend.

Such interactions open the door to new scientific questions and expose students to fascinating areas of research or exciting problems to calculate. Stirring conversations can solidify into long-term studentships and academic collaborations. Several of Sanders's students and post-docs have been scouted from his trips to "far-off" countries. Some of those students have now become outstanding educators and researchers in their home countries and help in the transnational pollination of scientific ideas.

Not only do international visitors present their research in specialized conferences, but they also provide the service of popularizing scientific knowledge. In my view, it's far more productive to intersperse research presentations with expository tutorials and public lectures, as people's appetites for advanced technical details can be far exceeded by their

innate desire to be motivated and to be inspired. The Khwarizmi Science Society is a grassroots scientific movement I have been working with for the past 25 years. The society organizes the Lahore Science Mela, a festival that attracts thousands of students, children, and citizens to a temporary scientific wonderland. One of the highlights has been the Large Hadron Collider Interactive Tunnel, built by the society in collaboration with CERN's Media Lab. The lab's João Pequenão flew in from Geneva and directed the enactment of a theatrical performance that used the tunnel to teach visitors about particle physics, antimatter, the Higgs field, and gravity. His brief stay in Lahore has sparked the society's plans to tour remote towns and conduct road shows for thousands of eager schoolchildren.

Through introductory workshop-style interactions, visitors can even lay the foundation for new disciplines inside host countries. The International Iran Conferences on Quantum Information have brought together experts from around the world and played a vital role in bolstering Iran's position in the field of quantum information and computation. Vietnam's International Centre for Interdisciplinary Science and Education, which organizes workshops on diverse topics, draws international visitors and has helped the country emerge as a regional powerhouse of physics and mathematics. The African School of Fundamental Physics and Applications orchestrates fundamental training programs in African countries and holds conferences where international experts converge and contribute to elevating scientific understanding.

Some institutions, such as the Abdus Salam International Centre for Theoretical Physics and the World Academy of Sciences, have made it part of their purview to connect scientists from the developing and the developed worlds. But the most potent form of advertisement is the individual scientist in a developing country who extends and strengthens existing connections with Western mentors and invites them to become the seeds of change.

At times, partners between hemispheres have built entire institutions. At

present I am dean of the Syed Babar Ali School of Science and Engineering at the Lahore University of Management Sciences. The design of the school, which is a startup experiment inside a university, owes its form to an international advisory board consisting of members from academia and industry. No one urges James Wescoat, the current chair of the board and a professor at MIT, to spend time advising the school's nearly 100 faculty members, all trained at the best universities in the world, on their academic programs and the investments they should make. It's only the inner calling of Wescoat and the other board members, who do not hesitate to visit our school in Lahore every spring, that pushes them to shape the future course of a thriving scientific ecosystem.

The global scientific enterprise can become an embodiment of international cooperation and can stand in the way of hegemony, imperialism, and war. That will require humanity to achieve its best virtue, which is that of sacrifice—namely, sacrificing time to ensure everyone is an equal in the global scientific mission.

## Reference

1. A. Salam, in *One Hundred Reasons to Be a Scientist*, Abdus Salam International Centre for Theoretical Physics (2004), p. 29.

**Muhammad Sabieh Anwar**  
([sabieh@lums.edu.pk](mailto:sabieh@lums.edu.pk))

Lahore University of Management Sciences  
and Khwarizmi Science Society  
Lahore, Pakistan

## LETTERS

### Once a physicist . . .

I appreciated Charles Day's introduction to PHYSICS TODAY's most recent careers issue (October 2021, page 8). I am always delighted to see attention drawn to the wide range of satisfying careers that can be entered with a physics degree.

The "Spotlight on Hidden Physicists" series in Sigma Pi Sigma's *Radiations* magazine is very special to me as a matter of inclusion and personal perspective. I vividly recall reading letters in PHYSICS TODAY around the time of the cancellation of the Superconducting Super Collider in

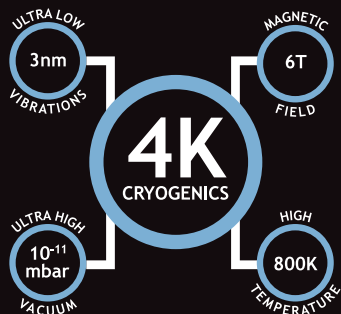
## CONTACT PHYSICS TODAY

Letters and commentary are encouraged and should be sent by email to [ptletters@aip.org](mailto:ptletters@aip.org) (using your surname as the Subject line), or by standard mail to Letters, PHYSICS TODAY, American

Center for Physics, One Physics

Ellipse, College Park, MD 20740-3842. Please include your name, work affiliation, mailing address, email address, and daytime phone number on your letter and attachments. You can also contact us online at <https://contact.physicstoday.org>. We reserve the right to edit submissions.

# CRYOSTATS FOR THE QUANTUM ERA



Advanced Research Systems  
ARSCRYO.COM

1993. Much was made of how the cancellation was (or wasn't) the demise of US physics and how difficult it was for new PhD physicists to find proper jobs at the time. Industrial and other "hidden" physics jobs were not given much respect, and I don't recall many letters that discussed the struggles of those with bachelor's degrees in physics during that time.

A few years later, I had the privilege of being elected to the National Council for the Society of Physics Students and Sigma Pi Sigma. Under the leadership of Gary White, the director from 2001 to 2012, I participated in developing the broad outline of the Hidden Physicists program. One of our goals was to combat the prevalent misconception that the only thing a physics degree was useful for was a career in academic or government research.

That attitude is a great insult to the majority of physics degree holders, because only a relative few wind up in the business of publishing physics articles. Every year the country produces many more students with bachelor's degrees in physics than with PhDs. For example, data from the 2019–20 academic year show that 9296 students received bachelor's degrees in physics, while 1830 earned PhDs in the subject.<sup>1</sup> For the classes of 2019 and 2020, only about a third of physics bachelors pursued graduate degrees in physics or astronomy, and not all PhD graduates in those years ended up in "publish or perish" jobs.<sup>2</sup>

I espouse the view that completing any degree in physics alters a person's worldview and influences them for the rest of their life, whether they wind up with a PhD in physics or a PhD in medieval literature (a path one of my students followed).

Yes, it is a viewpoint akin to that of Aslan's in *The Lion, the Witch and the Wardrobe* by C. S. Lewis: "Once a king or queen in Narnia, always a king or queen." I concede that not everyone will be so inclusive. I strongly contend that someone who regularly uses their physics background is still a physicist, even if they are not publishing physics papers. That includes someone like the editor-in-chief of *PHYSICS TODAY*, who must rely on a strong background in physics to be effective. So Charles, I recognize you as a physicist, and in your role at *PHYSICS TODAY*, you were perhaps the most vis-

ible "hidden" physicist that I could imagine!

## References

1. S. Nicholson, P. J. Mulvey, *Roster of Physics Departments with Enrollment and Degree Data, 2020: Results from the 2020 Survey of Enrollments and Degrees*, AIP Statistical Research Center (September 2021).
2. AIP Statistical Research Center, *Initial Employment—Physics Bachelors and PhDs: Classes of 2019 and 2020* (March 2022).

**Earl Blodgett**

(earl.d.blodgett@uwrf.edu)

Society of Physics Students

and Sigma Pi Sigma

College Park, Maryland

University of Wisconsin–River Falls

## The weak mixing angle

I thoroughly enjoyed reading Konrad Kleinknecht's excellent summary of Jack Steinberger's life and physics career (*PHYSICS TODAY*, September 2021, page 59). I was unaware of several of Steinberger's achievements. In my opinion, he deserved additional Nobel Prizes for some of them, such as his calculation of the two-photon decay rate and lifetime of the neutral pion and discovery of  $K_L^0$  leptonic decay's  $CP$ -violating charge asymmetry.

I would like to point out, however, that the Weinberg angle,  $\theta_W$ , referred to in the obituary is also called the "weak mixing angle." It was invented by Sheldon Glashow in his famous 1961 paper, "Partial-symmetries of weak interactions." It is the angle that diagonalizes the  $2 \times 2$  matrix of the neutral gauge bosons, giving the  $Z$  boson and the photon as the mass eigenstates in the model based on the gauge group  $SU(2) \times U(1)$ . With that model, Glashow proposed to unify electromagnetic and weak gauge interactions.

**Kenneth Lane**

(lane@bu.edu)

Boston University

Boston, Massachusetts

## Correction

April 2022, page 16—The pressure of the hydrogen isotopes in the capsule is 350 Gbar (about 350 billion atmospheres), not 350 GPa. PT