What does it mean to be a physicist right now?

The scientific enterprise is under attack. Being a physicist means speaking out for it.

Editor's note: This essay was adapted from a town hall speech given by John Doyle, president of the American Physical Society, at the June 2025 conference of APS's Division of Atomic, Molecular, and Optical Physics. It has been lightly edited for length and clarity.

JOHN DOYLE at the American Physical Society's Global Physics Summit in March 2025. (Photo courtesy of the American Physical Society.)

What does it mean to be a physicist right now? It's a question that has hovered in my mind from time to time. But today, it is sharply in focus as I see our members face not just rapidly growing challenges to their professional future but also attacks on the core values that have defined America. America is a place, but it is also a set of ideas, including a devotion to discovery and a deep commitment to truth. These ideals led to America becoming a global hub for study and research. They were a guide star for many and represented a higher aspiration for what the world could be.

So, right now, what does it mean to be a physicist? As president of the APS [American Physical Society], and as someone who has spent a career collaborating across continents and disciplines, I must constantly ask, What should we be doing right now? For some of us, physics is rooted here in the United States; for others, it's a journey that began halfway around the world and continues across borders. Wherever we call home, we're all part of a community whose choices matter—now more than ever.

As I stand before you today, I feel a deep sense of responsibility and grave concern not only for the scientific enterprise but also for the scientists—all of you—who drive it forward. Yet I also feel genuine enthusiasm for the exciting science that is represented here at DAMOP [the Division of Atomic, Molecular, and Optical Physics]. I have optimism because I believe in the strength of this society, in our worldwide community, and in the power of science to illuminate the path forward, even, or maybe especially, in turbulent times. To be a physicist right now means balancing our emotions and prioritizing what can make the greatest impact for our scientific community. It means facing uncertainty with integrity, speaking up for our values, and drawing strength from our colleagues, collaborators, and friends.

It is bitterly ironic that this year, the International Year of Quantum Science and Technology, which celebrates an area I have devoted much of my professional life to, coincides with the recent challenges we face. Quantum science and technology has undoubtedly made major contributions to national security and the economic wealth of the global community. Yet it, too, is under threat and, with it, the broad scientific umbrella that DAMOP is a part of. To be a physicist right now means to plot a future for our shared scientific enterprise in which we've invested our time and passion, because—make no mistake—its future is at serious risk.

Many of these pressures are not unique to one nation. Actions by the US executive branch have put strains on our scientific enterprise, and we know that

physicists around the world contend with their own headwinds. Funding threats, mobility barriers, and skepticism of expertise are all global challenges. At APS, these challenges only reinforce the importance of focusing on key priorities and actions that will make a substantive difference, including supporting our members and working to strengthen the international foundation of science.

Physicists must be not only scientists but also advocates, educators, and champions. Our ongoing goal, at APS and as physicists more broadly, must be to share our knowledge, to communicate, and to connect—not only to inform the public and policymakers about the wonder of discovery but also to make clear the practical value and social impact of our work.

One of the highest priorities has got to be explaining the best we can to elected officials and the public at large not only the enriching wonder of science and discovery but also the economic power the scientific enterprise brings and how it actually functions. I have learned that many physics students don't know how this all works. We should have been better at explaining this. Now, as we face new challenges, advocacy must become a part of what we all do. This includes understanding how science is funded and how public understanding drives the decisions of our elected officials, which in turn influences how the government supports our work. Why would a senator prioritize scientific funding over many of the other pressing issues the country faces? Good question.

An important part of the functionality of our scientific enterprise is two forces working together. The first is raw curiosity of how the physical world works. Many of us are driven by fascination with a mathematical understanding of the world and the need to comprehend in detail a certain pet piece of physics; some, by building and running experiments to get at that one mystery or make a new physical system. The second is the application of that knowledge to create tangible benefits for society, including transformative technologies and systems with commercial value.

These two forces—discovery and application—reinforce each other. This dynamic is what fuels progress. By supporting both pure curiosity-driven research and basic physics research with an eye toward future applications (either scientific or commercial), we ensure that science continues to advance knowledge and drive the innovation needed to build a better, healthier, more sustainable future for our global society. We need Congress to hear this. We need the executive branch and its advisers to hear this. We need the public to hear this. We have a responsibility to our fellow citizens to share our knowledge and also to be visibly responsible gatekeepers of what projects are funded with our citizens' money.

APS champions both curiosity-driven and application-minded research, recognizing that this dynamic is what keeps science innovative, relevant, and progressive. Those two research paradigms are part of the triad of the technology-innovation engine. The third part is the combination of venture capital, startups, and, yes, large corporate partners. Our advocacy efforts—whether through broad public engagement or direct, ongoing dialogue with Congress, university leaders, and industry partners—reflect our strategy that was set in motion before these latest challenges coalesced.

In all these arenas, we are deliberately working to remind our audiences that fundamental discovery and application go hand in hand and that continued support for both is vital to the future of not only our field but also the daily lives of all citizens. Successfully meeting the challenges of this century requires both political will and cutting-edge science. Economic prosperity will depend on maintaining the special triad that creates the innovation engine.

Recent government actions and funding threats in the US have only reaffirmed the relevance of our long-term work in science. Our work is about more than money and policy—it's about people. But make no mistake: Every cut in federal research funding is a cut in the number of trained students. It is the elimination of future industrial leaders, teachers, and problem solvers for our society. It is the ending of careers. It is scientists who will not develop the medical technologies of the future, never have the opportunity to develop new fundamental theories of nature, and not build the commercial products that put people and sensors into space. This is one reason APS is placing so much weight on the 2026 budget. Because

society needs that investment in people who create new knowledge, produce new products, and discover the wonders of the world that enrich our lives.

In light of that, it's important to remember that to be a physicist right now means to be a person too. It's about the scientists, from every corner of the globe, who enrich our labs, our classrooms, and our country. Today, too many face visa delays, travel barriers, financial hardship, or even personal attacks, purely because of who they are or where they were born.

This is why APS is granting free membership to anyone in need. This is why APS is continuing to fund programs like Bridge, which encourages graduate school for students underrepresented in physics, and like IDEA, which influences physics departments to be more accessible, more welcoming. APS programs are about creating opportunities and meeting people where they are. Our programs have always been open to everyone. APS values didn't change with previous changes of government, and they did not change with this last one either. We will continue to give travel grants, to fund innovative projects, and to equip K–12 teachers to spark interest in physics. Because it matters.

We owe it to this next generation of scientists to build a community that is truly open, supportive, and welcoming. We must foster a culture that upholds the well-being and dignity of all scientists and works to remove social or political barriers. And if America is to remain a global pillar of science, we must keep our doors open to talented scientists, ensuring that opportunity and respect are real for the next generation. Science cannot flourish in an atmosphere of fear or exclusion.

Thus, an issue of parallel importance with the federal science-funding level is immigration—in particular, keeping the doors open for international scholars, an extreme challenge lately. Our physics community has a large fraction of scientists who were born and raised in other countries; many are non-US citizens. The US scientific enterprise gets much of its vibrancy from these scholars. I was reminded of this in March while handing out prize after prize to international colleagues during the Global Physics Summit meeting. As public debate grows ever more polarizing, we must keep immigration and its overwhelming benefits clearly in focus.

As we move forward, clarity and unity are essential. We cannot fight every battle at once, but we can and must focus our energy where it matters most: supporting federal science funding, defending the ability of scientists to pursue essential research, keeping our doors open, helping policymakers and the public understand how science really works, and reminding everyone that investment in science is an investment in our shared future. The path is not perfectly laid out for us. We will wrestle with really big questions: What does it mean to stand at the intersection of scientific truth and societal change? Where can we go that preserves our scientific and APS values while surviving in a changing world? We are not the first group of scientists to face these questions, and we will not be the last.

My own international experience has shaped my perspective on the challenges we now face. For example, having observed Russia, now for decades, some of the recent actions I see lately here in the US are familiar to me. And sometimes I put down my APS journals—*PRX* [*Physical Review X*], *PRL* [*Physical Review Letters*], et cetera—and read a book.

Books like *The Spanish Civil War* and *Moscow, 1937* are tomes that have some relevance. How was it that in the middle of the last century, with modernism moving quickly across Europe, many subgroups in Spain were to aggregate and decide it was better to go to war than to compromise? None were willing to change their stance on some pet issue, none were willing to find a middle ground, regardless of the grave practical consequences. How is it that in 1937, the technological and scientific leaders that brought Russia so far so quickly over the previous decade—including those whose scientific and technological efforts showed a direct benefit to the people—were then summarily executed? It is bewildering to comprehend. All of this was done within an allegedly "stable" political system.

The landscape we work in today is not what we envisioned for the US 20 years ago. The myths that we carry with us day to day—as any people in a society do—these myths that ground us and make us happy should be looked at with a cold eye. It is a changed landscape, socially and politically, and we must remain focused on our APS mission to preserve—and maybe even enhance—the scientific enterprise while promoting our shared values. Thankfully, there is actually great consensus about what those values are.

Progress is never inevitable. Societies can lose their way. It is up to each of us to make the case, in language that resonates beyond academia, that science is not a luxury but a necessity. A necessity that is a key pillar of a civil society, one that flourishes by solving the real problems of our time.

The truth is under attack, and physicists, perhaps more than any group, must continue to tell the truth, even when it is uncomfortable. Truth is our major currency among the public. It is our superpower. Never give in on this. Never hold back.

The actions you have taken these past months—your letters, your advocacy, your engagement—are building the foundation for what comes next. The plan we've been enacting over the past six months reaches across partisan lines because it is grounded in facts, values, and a vision of shared prosperity.

We are not simply reacting to threats: We are organizing for the long-term health of science and of our society. In this work, every voice matters.

So I come back to where I started: What does it mean to be a physicist right now? For me, it's about standing up for truth, for openness, for each other, and for the future of science, wherever it's practiced.

We are facing real challenges, and we have a responsibility to shape what comes next. Every time we support one another, speak out for our values, or push back against obstacles to discovery, we help protect and advance the scientific enterprise—not just for ourselves but for generations to come.

Let's keep moving forward, together. Let's keep raising our voices for science, defending our community, and making sure that physics remains a force for progress and hope. I know that, together, we can meet this moment and help science thrive, in America and around the world.

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