Pusey and coauthors that Hobson cites, implying that quantum states are physically real, relies on such hidden variables.) An agent's state assignment rests entirely on her experience of the external world. It is neither solipsistic nor superstitious to maintain that any agent's experience comes fully into being only at the moment it is experienced.

Hobson's treatment of Eugene Wigner and his friend relies on decoherence producing an objective mixed state, which both of them must agree on. But since quantum mechanics holds all the way out to infinity (as Griffiths puts it), even from an objective view of quantum states, that switch from superposition to either/or is at best a FAPP solution, to use Bell's wonderfully sardonic abbreviation of "for all practical purposes."

QBism does not, as Hobson concludes, give up on a realist interpretation of nature. But it does warn us not to confuse nature with the abstractions we have ingeniously constructed to help any agent deal with the very real impact of nature on his or her own internal experience (see my Reference Frame, PHYSICS TODAY, May 2009, page 8).

I'm glad that Blake Stacey has called attention to some of the more applied spinoffs of QBism. I'm also pleased that he mentions Bruno de Finetti, one of the great 20th-century pioneers of subjective probability. Indeed, since there are objective as well as subjective Bayesians, if I had my way, the B in QBism would stand not for Thomas Bayes, but for Bruno de Finetti, who put the crucial point like this: "The abandonment of superstitious beliefs about the existence of Phlogiston, the Cosmic Ether, Absolute Space and Time . . . , or Fairies and Witches, was an essential step along the road to scientific thinking. Probability, too, if regarded as something endowed with some kind of objective existence, is no less a misleading misconception, an illusory attempt to

Open letter to the associate director for DOE's Office of Fusion Energy Sciences

We are early-career research scientists and professors, all under 40, who work in plasma and fusion science. We are concerned about the proposed fiscal year 2013 budget for the Office of Fusion Energy Sciences (OFES) in the Department of Energy's Office of Science and about the future plasma and fusion science funding trajectory it represents.

The current US administration has affirmed its "world-class commitment to science," with the goal of attracting more US students to science and engineering now, and to ITER, the international tokamak fusion project, as it reaches full operating capacity 15 years from now. Those commitments should be applauded, and they should be acted on sensibly to maximize the return on investment for US taxpayers in today's tough fiscal environment.

With a price tag upwards of $20 billion, ITER is the cornerstone of the world's fusion energy program. It represents a leap forward on the path to a viable fusion reactor. Yet ITER is more than an engineering project. It will have to create, confine, and control a self-sustained, burning plasma. The challenge of studying that plasma state is matched by the anticipation of what we will learn. We have theories of how a burning plasma will behave and how associated heat loads and energetic particles will impact the ITER wall materials. And there is one thing we know: ITER is discovery science, and a burning plasma will produce plenty of surprises once we get there. Some surprises may be advantageous, others will need to be mitigated.

US plasma and fusion scientists must be in a position to understand and expand on those new physics insights. The vibrant *domestic* program must be maintained and nurtured, so that today's graduate students and postdocs can become experienced scientists and leaders 15 years from now.

Instead, the administration's FY 2013 OFES budget redirects one-sixth of the FY 2012 domestic spending to the ITER project (see PHYSICS TODAY, June 2012, page 25). If that trend continues, within the next two years hundreds of scientists and engineers at premier US institutions will be laid off. Over time, those layoffs will lead to the permanent loss of some of the brightest young minds from the US plasma and fusion program, and likely from the academic and research communities altogether.

The fusion program has a public-image problem: It was supposed to deliver cheap and safe nuclear energy long before many of us young scientists entered the field. But the plasma and fusion program is much broader than energy research. It encompasses the study of supernovae explosions, solar coronal mass ejections, galaxy clusters, wakefield accelerators, the basic complexity of dynamical systems, and many other plasma phenomena.

Plasma science, with its enormous breadth, draws on many funding agencies, but the 2007 National Research Council report *Plasma Science: Advancing Knowledge in the National Interest* has called on the DOE Office of Science to take the stewardship role in guiding the multifaceted and exciting research field forward. The Office of Science must act on this deed of trust and enable us to capitalize on the public curiosity and interest in the 99.9% of the visible universe we call a plasma.

The US Congress has consistently said that ITER funding should not come from the domestic fusion program, which is already underfunded, yet the contributions to ITER are threatening to consume the entire domestic OFES-funded program. The proposed FY 2013 US contribution to ITER is $150 million and is scheduled to double or even triple in the next few years. That makes us deeply concerned for the ability of the Office of Science to allow and encourage domestic plasma and fusion research to survive and thrive.

The under-40 crowd, those expected to lead our field in the ITER era, respectfully request that you not let the world-leading US plasma and fusion program weaken in comparison to our partners and competitors. Instead, let us capitalize on the taxpayers' domestic R&D and ITER investments. Let us build a stronger and broader program to advance knowledge in basic plasma and fusion science and to prepare the scientific workforce of this country for the era of burning plasma.

In addition to the two of us, 61 other early-career scientists from 27 organizations across the country have signed this letter. The original version, with all its signatories, is available at http://fire.pppl.gov/under_40_letter_2012.pdf.

Vyacheslav Lukin
US Naval Research Laboratory
Washington, DC

Anne White
Massachusetts Institute of Technology
Cambridge