colder planets of roughly Earth mass can retain a hydrogen atmospheric blanket that allows for liquid water; they could even be interstellar planets.[2]

The habitable zone, as usually defined, does have one obvious advantage in our exoplanetary observations. Earth-mass planets in that Goldilocks zone may have atmospheres sufficiently thin that they allow observation of the surface or at least yield clues as to what is below. Earth has a naked ocean, potentially observable from afar. It also has ample usable energy, in the form of sunlight, although one should never confuse supply with sufficiency—we do not know the minimum needed.

Let us be clear in our thinking: Do we choose to obsess over the habitable zone by the same reasoning that a drunkard looks for his car keys under the street lamp—because that is the only place he can see? Or is our thinking so anthropocentric that Earth-like planets matter most and are what the public will support with tax dollars? We cannot be sure that they are the most abundant habitations. And they are not necessarily easier to observe. When visiting a city far from home, do you immediately seek out the restaurant that provides the food most like what you usually eat? Do we know the right place to find a Snark?

References

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LETTERS

Human rights and international collaboration

Charles Day's editorial "Physics and human rights" (PHYSICS TODAY, March 2018, page 8) raises an important question of whether we should limit collaboration with scientists from countries that violate their citizens' human rights. My own experience of living in the Soviet Union supports the editor's viewpoint that collaboration is almost always virtuous.

In the 1970s and early 1980s, Soviet researchers were rarely allowed to travel to international conferences abroad—even when that travel was fully paid for by the event organizers. We were often not allowed to submit papers for publication in international journals. I myself was summoned by the KGB and threatened with jail time for sending my mathematical papers abroad. Even access to international journals held in Soviet libraries was often limited. For example, several issues of the *Notices of the American Mathematical Society* were not available to us without special KGB permission, because in addition to mathematics they also discussed violations of scientists' human rights worldwide. Those issues never made it to the mailboxes of individual subscribers like me, and the ones delivered to the libraries were placed in special restricted-access sections.

After I complained to the American Mathematical Society (AMS) about missing issues, it started sending them to me by registered mail with return receipt, so I was probably the only person in the Soviet Union—and definitely the only one in St Petersburg—who received those forbidden issues. Of course, I gladly shared them with my colleagues.

Although the forbidden issues included pieces about how the Soviet Union often violated the human rights of scientists, the proposed responses to punish the leadership shocked many of us in the Soviet science community. Several AMS contributing writers suggested decreasing international collaboration, in particular expelling all Soviet scientists from the AMS and ceasing to send us their publications. So on the one hand, the KGB was stealing some of our publications, and on the other hand, our own colleagues were now proposing, in effect, further oppression by depriving us of the publications altogether.

Luckily for us, saner voices prevailed in the AMS. So here is my plea: Before proposing any action to combat human-rights violations, please consider how it will affect the very scientists whose rights are being violated.

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Physics makes do in Cuba and elsewhere

The story by Toni Feder (PHYSICS TODAY, March 2018, page 48) about the status of physics in Cuba was insightful and full of information. Large portions of it resonate with my own life and academic experience. I graduated with a physics diploma back in the 1990s, but it was tough to actively pursue research in my native Albania. At the time, the International Centre for Theoretical Physics (ICTP) was a lifeline of support to students and visitors from developing and Eastern European countries (see my Letter to the Editor, PHYSICS TODAY, April 2015, page 11) the same way it is doing now for some Cuban physicists featured in Feder's story. I completed the ICTP's condensed-matter-physics graduate program in 1994.

The answer to the important question raised about the next generation of physicists in Cuba depends heavily on what model Cuba will use in an evolving world to keep homegrown physics programs attractive for young researchers to want to return. Without carefully thought-out programs, the majority of those earning PhDs in developed countries will not return to Cuba, and as a result, excellence will be hard to sustain.

Apart from the economic hardships, the most serious challenge for the Cuban physics community is to simultaneously pursue international exchange collaborations while somehow reversing the brain drain of researchers. Highly skilled young researchers educated abroad need attractive reasons to return.

For me, the lack of such opportunities in my native Albania meant that I had little incentive to return after I obtained my PhD in theoretical condensed-matter physics in 1997. Obviously, the trend repeats in many developing countries. Passion and creativity are indeed driving forces, but they have their limits.

Both academics and government officials must offer young PhD researchers reasons to return and opportunities to grow. Otherwise, as has happened in other developing countries, physics education in Cuba will further decline.

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The interesting article on Cuban physics in the March 2018 issue reminded me of further evidence of Cuban physicists' ingenuity and skill. I discovered those traits while visiting Havana in 1999, when sanctions were still in full force, to attend a conference and to give a lecture at the University of Havana.

The sole nuclear-medicine gamma camera in Havana's principal hospital was a modern device made by GE, acquired at great expense through a European intermediary. The associated computer and its programs became unusable, and no funds were available for a replacement. So Cuban physicists produced a substitute computer and software, which were proudly demonstrated to me. Although the device was clumsy in appearance and the software awkward to use, it performed all required functions to record, display, and manipulate data. I was duly impressed. Not only do Cuban physicists ensure national intellectual self-reliance, they can also serve other scientific disciplines most satisfactorily.

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Correction

September 2018, page 13—The last sentences of the first paragraph of Charles W. McCutchen's letter should read as follows: Loaded cartilage slowly loses pore fluid, but with each step the flexing and unloading of the joint and the bad fit of the cartilages to each other expose the surface of each to free fluid that it can resorb. I called this cycle "weeping lubrication" because cartilage weeps fluid when squeezed. PT