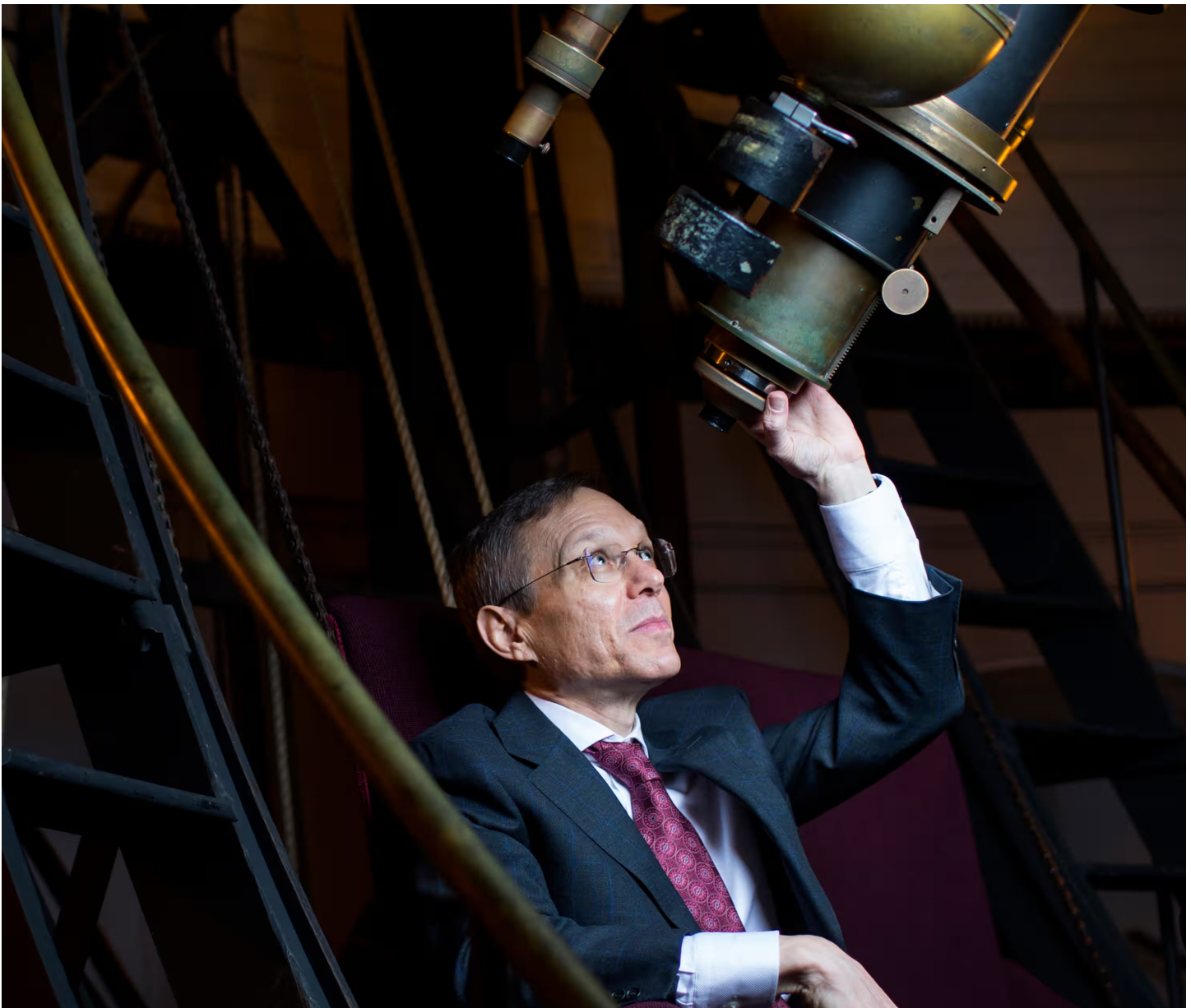


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The alien hunter: has Harvard's Avi Loeb found proof of extraterrestrial life?

The astrophysicist and professor likes to ruffle feathers - and says his critics are merely jealous. He discusses UFOs, interstellar objects and the risks of his all-consuming search

by [Daniel Lavelle](#)

Avi Loeb at the observatory near his office in Cambridge, MA. Photograph: The Washington Post/Getty Images

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Avi Loeb has a chip on his shoulder. For years, the Harvard astrophysicist has been trying to find aliens. He's in the middle of trying to record the entire sky with an international network of telescopes and recently travelled to Papua New Guinea to find out if a **meteor detected in 2014** was actually part of an interstellar spaceship. Meanwhile, academics and pundits snipe at him in the media, and he's sick of it.

"I hear that the scientists say: 'Why would you go to the Pacific Ocean? It's a waste of time, waste of energy.' And I say: 'I'm not taking any of your research money; I'm not asking you to do anything. I'm doing the heavy lifting.' Why would they be negative about it?" Loeb complains as he shows me around his mansion in Lexington, Massachusetts, one of the richest boroughs in the US. He's busy rehearsing for a one-man show about his life and work, which he'll perform in his attic tomorrow. Apparently, I'm the "only journalist to be invited", apart from the camera crew filming a documentary.

Loeb, 61, has just finished a five-mile run, which he does every day at about 5am before knuckling down to work. Small, suited, bespectacled and well groomed, he looks a bit like Jeffrey Archer in a schoolboy uniform. After a very brief tour of his office - blink and you'll miss it - we arrive in his immaculately tidy living room. He offers me sparkling water and a bowl of chocolates. Loeb is slender, but he loves chocolate, consuming 800 calories a day from it. "I cannot give up," he says. "I'm addicted."



A 3D illustration of 'Oumuamua. Photograph: Aunt_Spray/Getty Images/iStockphoto

Is he nervous about his show? “No, no,” he says. “Because I’m playing myself - there’s no difference.” Netflix will be filming it; in June documentary-makers accompanied him on his trip to Papua New Guinea where he recovered debris from a fireball that landed in the sea to the north of Manus Island. “There were over 50 film-makers and producers that wanted to document what I’m doing. They wanted to be on the ship, but I said I had a contract just with one.”

A distinguished scientist, Loeb has published hundreds of papers, as well as a bestselling book, [Extraterrestrial: The First Sign of Intelligent Life Beyond Earth](#). He’s the Frank B Baird Jr professor of science at Harvard, the director of the Institute for Theory and Computation at the [Center for Astrophysics](#), and the director of the Galileo project at Harvard. But he was relatively unknown until a peculiarly shaped object zoomed through our solar system in 2017. Astronomers described it as having “extreme dimensions” and concluded it must be interstellar. Officially known as 1I/2017 U1, it was given the nickname 'Oumuamua - Hawaiian for “scout” or “first distant messenger” and pronounced like a child startled by a cow: Oh mooer mooer.

'Oumuamua was long, thin and flat, like a pancake. After further analysis, astronomers spotted more anomalies. They determined that before telescopes detected the object, it had accelerated while travelling past the sun. This is normal for comets, rocky icebergs that melt in the heat and release gases that act like booster rockets. This is what gives comets their signature tail, but this asteroid didn’t have one. According to Loeb: “No tail, no comet.” In a paper co-written with Sean Kirkpatrick, the director of the [All-domain Anomaly Resolution Office](#), which investigates UFOs for the US Department of Defense, Loeb later hypothesised that 'Oumuamua could be a solar sail from an interstellar craft, using sunlight to accelerate through space. In other words, it belonged to aliens.

In what was a big year for UFO-hunters, 2017 was the year that the Pentagon [admitted to investigating UFOs](#). The \$22m budget was reportedly also used to investigate alleged UFO sightings and all [manner of unexplained goings on](#). Loeb rode the wave of interest to international fame.

His destiny certainly wasn’t written in the stars. Loeb, partly of German descent, grew up on a chicken farm in Israel. His grandfather, Albert Loeb, a veteran of the first world war, fled the Nazis when it was clear that fighting for his country at Verdun wouldn’t protect him from antisemitism. “He left everything behind, and about 56 people of the family stayed in Germany because they said they would leave on the last train. And the last train led to the concentration camps,” Loeb says. Albert arrived in Palestine and helped the British by giving them aerial photographs

of an important dam in Frankfurt, which they later bombed. “That was his revenge,” says Loeb.

Around the time 'Oumuamua made headlines, Loeb lost both his parents. He was particularly close to his mother, who was very loving and always encouraged his intellectual curiosity. “I used to go to the hills on a tractor and read philosophy books, mainly existential ones. So, I was interested in the big questions of our existence.”

When we meet, Loeb is a few months back from his expedition to Papua New Guinea, where he collected spherules - tiny glassy beads of metal and rock - debris from the 2014 meteorite. US Space Command telescopes, designed to detect enemy missiles, tracked the meteorite. Exactly how the trajectories and positions of objects are measured is classified, but it claimed to be “99.999%” certain that the fireball’s origins were interstellar. Loeb believes that because the meteorite was travelling so fast, and did not burn up high above the Earth, it must have been made of something more robust, even artificial. “This object was faster than 95% of the stars near the sun, relative to what is called the **local standard**. That’s what led me originally to suspect maybe it’s a spacecraft,” Loeb says, glee written all over his face. “It was able to maintain its integrity to very high stress. And so, we said it must be tougher than even iron meteorites.”

So far, Loeb and his team have only recovered small spherules from the path of the meteorite - a bit like collecting water droplets that have cascaded from a burst water balloon - but they are planning on heading out next spring to look for bigger pieces. “Then you can easily tell if it’s a rock or a technological gadget base. And, of course, if it’s a gadget, it would have screws, it would have perhaps buttons on it,” he says.

Would he press those buttons? “I asked the students in my class the same question. Half of them said: ‘No, don’t do that because it will affect all of us.’ And half said: ‘Yes, we are curious.’ And then one of the students asked me: ‘Professor, what would you actually do?’ And I said that I will bring it to a laboratory and examine it before engaging with it.”

This is one of the central questions of alien hunting: do we actually want to find them? Is it a good idea to reach out to species that could be just as violent as humans, as well as more advanced?

“I’ll tell you what bothers me the most,” Loeb says. “It’s not so much that curiosity could be dangerous - it’s that childlike bullying is more prevalent than childlike curiosity in academia. People just try to step on every flower that rises above the

curiosity in academia. People just try to step on every flower that rises above the grass level. This negativity is very damaging because it suppresses innovation.”

Loeb’s critics would counter that he is prone to making extraordinary claims without good evidence. Before heading to Papua New Guinea, Loeb advertised his expedition on a giant screen in Times Square. He then liveblogged his discoveries from the Pacific. His detractors say this approach misleads the public and distorts how “real science” is done.



Loeb with a tube containing meteorite fragments recovered from the bottom of the Pacific Ocean.
Photograph: Anadolu/Anadolu Agency/Getty Images

They may have a point. After collecting the spherules, Loeb declared on television that his discovery was “the first time that humans hold material belonging to a big object that came from outside the solar system.” But at the time it wasn’t clear where the spherules had come from. It still isn’t.

Spherules cover the Earth, and most aren’t from meteorites. Their origins range from volcanoes to the Industrial Revolution and the iron age. As it turns out, Harvard’s analysis showed the samples had unusual compositions, but whether they belong to the meteorite Loeb is looking for, let alone if that in turn was created by extraterrestrials, will require much more research.

Loeb sees his detractors as self-important and jealous, as well as myopic and risk-

averse in the extreme. He strongly believes that blogging his research improves public understanding of the scientific process. “Some people told me: ‘It’s the first time we see how science is done. Because we often hear just in press conferences the final result.’ They [scientists] sit on a stage and tell the public what the truth is, and the public doesn’t like that because it appears like the work of the elite,” he says. He insists his blogs are like detective stories. “And the public loves detective stories. I mean, what’s the problem?”

The problem, of course, is that scientists usually keep quiet until their peers have had a proper look at their work. “That’s another way to do it,” Loeb said when the New York Times put this to him in August. “But it was not a crime.”

What *is* criminal, he suggests, is the underfunding of his chosen field, especially compared with something like Cern. “The Large Hadron Collider was billions of dollars looking for supersymmetry, and it’s not there. They haven’t found it.” He’s not a big fan of theoretical physicists, either. “There is a whole community of people trying to unify quantum mechanics and gravity. These are people working on string theory, extra dimensions and the multiverse, and they don’t have a single piece of evidence, yet they work on it for decades. And they think that they are promoting the frontier of physics.”

The next day I return to Loeb’s house for his show, joining an audience of his students, friends, colleagues and family. Loeb hopes to take it from his attic to off-Broadway, and stands a good chance. Joshua Ravetch, who co-created and directed Carrie Fisher’s one-woman show *Wishful Drinking*, is at the helm, and an Oscar-winning songwriter, Alan Bergman, has written a song for the show.





Loeb near his home in Lexington, Massachusetts. Photograph: Kayana Szymczak/The Guardian

The performance takes the form of a monologue, broken up by slides and short videos. Loeb begins with 'Oumuamua, and it is not long before he is throwing shade at his critics. "I felt like the boy in the Hans Christian Andersen tale, pointing to the astronomical community and saying 'The emperor has no clothes' - 'Oumuamua has no tail."

Then it's on to the many theories about the asteroid. The possibility that it was a nitrogen iceberg? "We've never seen a nitrogen iceberg, and it would not survive the interstellar journey." The theory that it was a dark comet? "We've never seen that either. I guess it would be dark, so invisible." As for the suggestion that it *was* a comet, after all, with a core of ice - a water iceberg ... "Well, OK, we've seen those," Loeb quips, to the sound of music from Titanic.

He goes on to liken the pushback he's received to the oppression that Galileo and Marie Curie endured, before invoking the Wright Brothers. "In the year 1900 it was a stated fact that human flight was an impossibility - end of discussion. No less than Thomas Edison announced that it would not be possible. The New York Times stated that it would take at **least a million years for men to fly** - a million years." Such comparisons are unlikely to convert anyone who sees him as an egotist.

But perhaps that's a little unfair. Before I leave, I ask Loeb what is to be gained from looking for aliens, and his reply is surprisingly humble. "We know from our private life that if we find a partner, it gives new meaning to our existence," he says. "So finding a partner somewhere in the form of another civilisation that can teach us things that we can imitate, that we can aspire to, will give us a meaning to our cosmic existence. The universe will not be pointless any more."

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