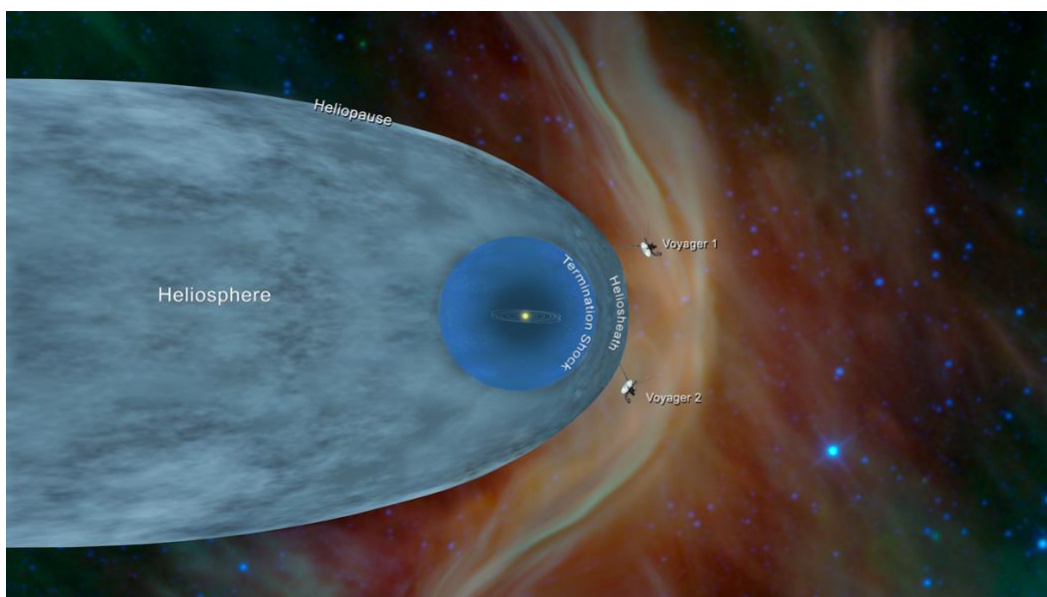


Questions:

1. Why the Local Bubble is still growing at 4 miles per second even now?
2. How could the solar system enter the Local bubble? Since they are at the same distance from the center of the Milky Way, and they are orbiting around the Milky Way in the same direction, their speed should also be the same due to the space.

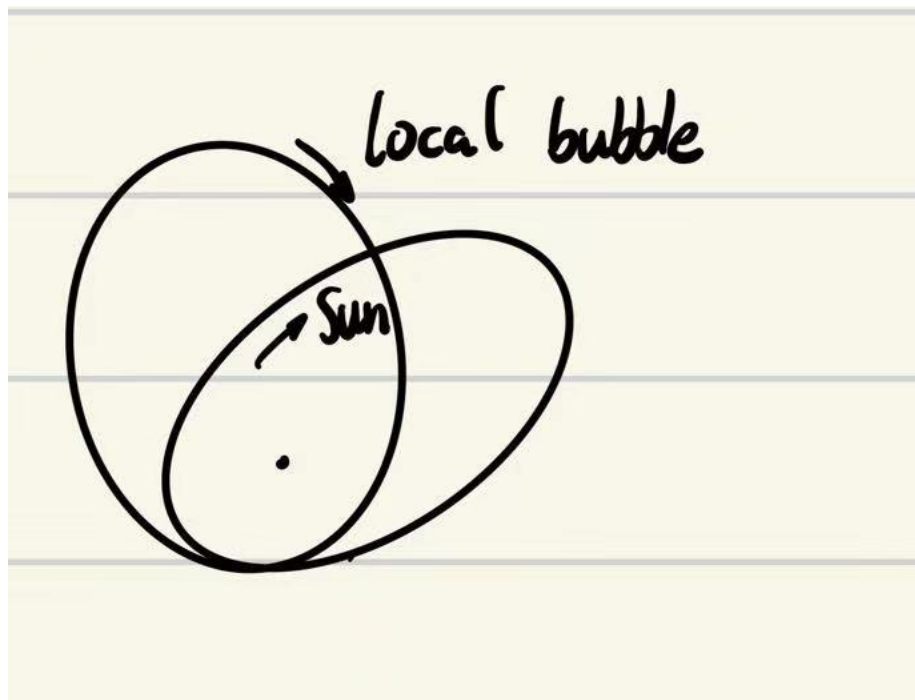
Explanations:

1. There are now two possible explanations for why the local bubble is still growing at the stage of 4 miles per second. First, there is inertia from the supernova explosion in the past. However, in space, there is no air resistance, which there must be something slowing it down, and this is something to do with a condition in outer space. On May 22, 2013, Voyager was moving into an increasingly dense region of plasma. This plasma had the signatures of interstellar plasma, with a density more than 40 times that observed by Voyager 2 in the heliosheath. In other words, as we move away from our solar system, moving away from the local bubble, the density of ism keeps increasing, acting as a thicker and thicker wall to resist the local bubble from expanding. Another understanding would be the stellar winds from stars inside or near the local bubble can keep adding energy to the bubble, making it grow.



2. The reason why the solar system can enter the local bubble might be solved with two current explanations. First of all, there is something due to the density wave theory, it states that the spiral arms of a disk galaxy are regions of the galaxy that are of higher density. As our solar system is situated on an arm of the Milky Way, scientists found out there are denser stars in the arms, which are mostly young stars and systems. Hence, imagine passing an arm is similar to passing a traffic jam, and the local bubble acts like a truck due to its size, and our solar system is like a motorcycle, which would make the local bubble harder to pass the arm compared to the solar system, creating the speed difference to allow the solar system to enter the local bubble.

Another possible explanation would be the local bubble and the solar system are on different orbits as they move in the Milky Way, but they just coincidentally met at the point where we are right now.



Citing:

Jet Propulsion Laboratory. 'How Do We Know When Voyager Reaches Interstellar Space?' NASA, September 12, 2013. <https://www.jpl.nasa.gov/news/how-do-we-know-when-voyager-reaches-interstellar-space>.

<https://study.com/academy/lesson/density-wave-theory-spiral-galaxies.html#:~:text=Basically%2C%20this%20theory%20states%20that,the%20galaxy's%20stars%20and%20gas>.

https://youtu.be/kBU9Luc4NuM?si=E_ON0rqHfTDKcV3

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<https://upload.wikimedia.org/wikipedia/commons/4/43/PIA22835-VoyagerProgram%26Heliosphere-Chart-20181210.png>.