

# PARKER SOLAR PROBE OFFERS AN ADDITIONAL EXPERIMENTAL PROOF FOR THEORY OF THE RELATIVE IMAGE

EMAD Y. MOAWAD

A graduate Engineer at Ain Shams University, Cairo , Egypt.

<https://orcid.org/0000-0003-0248-2050>

[emadmoawad@hotmail.com](mailto:emadmoawad@hotmail.com)

## Abstract

The Parker Solar Probe (PSP) performed its first outbound flyby of Venus on July 11, 2020. The onboard Wide-field Imager for PSP, or WISPR, captured a striking white & black image of Venus during a solar eclipse. On the other hand, the Akatsuki is a Japanese space probe (JAXA ) that has revolved around Venus since 2015. The onboard Lightning and Airglow Camera ( LAC ) which is designed to operate in the visible light has not produced an image of Venus yet, whereas other 4 onboard cameras captured false-colour images of Venus using the ultraviolet and infrared spectra. A suspicion of believing the similarity between the WISPR image in visible light and one of the Akatsuki infrared images led to the belief in WISPR ' s ability to capture near infrared images, even though it is designed to work in visible light only! Theory of the relative image provides two reasons for the ability of WISPR on PSP and the inability of LAC on Akatsuki to capture true-color images of Venus in the same conditions, regarding the location, distance and the time of imaging with respect to Venus. The first is the difference in their orientation during capture; Akatsuki orbits Venus, which in turn revolves around the sun, then Akatsuki orbits around the sun as well, in a wavy path that bends around the surface of Venus in a vortex from, toward, and opposite to sunlight, exposing the images to scattering , Blurring and distortion. While the PSP moves along an elliptical path around the Sun perpendicular to the direction of the Sun rays providing the ideal location of photography. The 2nd reason is the relative velocity of Akatsuki and PSP with respect to Venus, which is directly proportional to the detected wavelengths by each of LAC and WISPR respectively. And as Venus is detected by the naked eye from each

of the Moon and the Earth; Then due to the lower relative velocity between Akatsuki and Venus compared to that between the Moon and Venus, a major blue shift occurs to the detected wavelengths of Venusian emissions by LAC and becomes unable to capture Venus. And conversely, due to the higher relative velocity between the PSP and Venus compared to that between the Earth and Venus, a major red shift occurs to the detected wavelengths of Venusian emissions by WISPR and becomes able to pick up Venus in the Far-red light just before the infrared range in a white and black image.

### **Acknowledgement**

The author acknowledges the mission and the teams of both PSP and Akatsuki that produced the data in this paper.