EXTRACTION OF KINETIC SCALE STRUCTURES FROM VENUS MAGNETOSPHERE USING PARKER SOLAR PROBE DATA FLYBY. D. Sur[1,2], [1]Catholic University of America, 620 Michigan Ave NE, Washington, DC 20064, US. [2]NASA Goddard Space Flight Center, 8800 Greenbelt Road, Greenbelt, MD 20771, US, dibyendu.sur@nasa.gov.

Introduction: The Parker Solar Probe (PSP) is designed to study the features from solar wind and its heating and acceleration mechanisms. In order to reach near solar corona, PSP needs seven flybys from Venus. These flybys provide us excellent opportunities to study the Venus magnetosphere with unprecedented details.

Venus magnetosphere is an induced magnetosphere which is generated due to interactions between solar wind and the planetary ionosphere. The strength of this magnetosphere is weaker than Earth and its magnetospheric standoff distance is just ~1-2 Venus radius from its surface (in contrast with Earth, the standoff distances is ~12 Earth radius in quiet conditions). Studying an outer planetary magnetosphere with different morphologies is very important. The knowledge we gained while studying the Earth's magnetosphere over decades can be used for other planetary magnetospheres in order to observe the similarities/dissimilarities.

Kinetic scale structures: Kinetic scale magnetospheric structures (below the proton Larmor radius) are crucial as they provide information related to plasma instabilities, wave-particle interactions, emission of radio waves and scatterings of electrons [1][2][3]. Kinetic structures such as Double Layers (DL) and phase-space holes were already found in different sections of the Earth's magnetosphere. But, in absence of high-resolution data, observation of these structures were not possible so far from other planetary magnetospheres.

PSP instruments: PSP has FIELDS suite [4] which consists of instrument capable of measuring electric field ranging from DC to 40 Megasample/sec and magnetic field with frequencies ranging DC to 2 Megasamples/second. The presence of DC coupled voltage probe allows it to measure wider range of voltages. Data from Solar Wind Electrons Alphas and Protons (SWEAP) instruments [5] are also helpful for measuring the presence of charged particles.

Observations: The present paper reports presence of DL and phase-space holes during PSP's 4th flyby on February 20, 2021. Before entering to the magnetotail region, PSP went through the magnetosheath region during 19:58:31 - 19:58:35 UT. We have found few cases of DL and phase-space holes during these periods. These shows the similarities of the Venus magnetosphere with the Earth's magnetosphere. The paper will report these structures alongside provide a detailed comparisons between the Earth's magnetosphere and the Venus magnetosphere.

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References: Use the brief numbered style common in many abstracts, e.g., [1], [2], etc. References should then appear in numerical order in the reference list, and should use the following abbreviated style:

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