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Poster

JPL's Compact Vector Helium Magnetometer (CVHM), with has heritage from those flown on the Ulysses and Cassini missions, represents an evolution in spaceborne magnetometry. Initially developed for NASA Dynamo sounding rocket experiment to study Earth's dayside ionospheric dynamo, the CVHM was also developed for the Interplanetary NanoSpacecraft Pathfinder In a Relevant Environment (INSPIRE) mission. Most recently, the CVHM flew on the CubeSat for Solar Particles (CuSP) mission, a secondary payload aboard Artemis I in November 2022, where it was intended to measure the interplanetary magnetic field (IMF) carried by the solar wind, advancing our understanding of space weather phenomena. Here, we report on the design and development of the CVHM for potential use on a solar sail mission intended to make magnetic field measurements at L1 for space weather monitoring, where the instrument's attractive SWaP (size, weight, and power) and flat noise floor provide a significant advantage over heritage designs. In this presentation, we will provide an overview of the instrument's operational principles, it's architecture, and the testing the instrument will eventually undergo in the two-year development cycle. This work is supported by the NOAA NESDIS FY24 Systems Architecture and Engineering Joint Venture Partnerships (SAE JVP) Technology Exploitation Program and managed by NESDIS Office of Space Weather Observations, an interagency collaboration between NOAA, CU, and JPL.

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