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The Cosmic Infrared Background ExpeRiment-2: First Flight Status Report

Serena Tramm[1] Priyadarshini Bangale[1] James Bock[2] Yun-Ting Cheng[3] Asantha Cooray[4] Richard Feder-Staehle[2] Grigory Heaton[2] Yuya Kawano[5] Arisa Kida[5] Phillip Korngut[2] Alicia Lanz[6] Daehee Lee[2] Simon Liu[2] Shuji Matsuura[5] Chi Nguyen[3] Kazuma Noda[5] Mike Ortiz[1] Won-Kee Park[7] Kei Sano[8] Koji Takimoto[5] Kohji Tsumura[9] Michael Zemcov[1]

[1]Rochester Institute of Technology, [2]California Institute of Technology, [3]Caltech, [4]University of California, Irvine, [5]Kwansei Gakuin University, [6]Carnegie Observatories, [7]Korea Astronomy and Space Science Institute (KASI), [8]Kyushu Institute of Technology, [9]Tokyo City University

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The Extragalactic Background Light (EBL) is the integrated light produced by all emission over cosmic history. In the near-IR, the EBL encodes the contribution from the first objects that formed during the Epoch of Reionization (EOR) all the way to the light from nearby galaxies. It is challenging to make precise measurements of the EBL because it is difficult to disentangle from bright local foregrounds. Intensity mapping is a technique in which EBL fluctuations are measured on large angular scales where the known foreground contributions are small or well-understood. Multiple intensity mapping studies have found that the optical/near-infrared EBL large-scale fluctuations exceed predictions from galaxy models. To explain the excess, several astrophysical sources have been proposed including intra-halo light (IHL) from low-mass stars in the outskirts of galaxies. This IHL is produced in the late-time universe so it can be separated from the EOR component using their unique spectral signatures. The Cosmic Infrared Background ExpeRiment 2 (CIBER-2) is a sounding rocket experiment which comprises a 28.5-cm telescope cooled to 80K that images to three HAWAII-2RG detectors with dual-band filters to obtain data over the range 0.5–2.0 μm in six wavebands simultaneously. CIBER-2 made a successful first flight from White Sands Missile Range in New Mexico on June 7th of 2021. This poster reviews our pre-flight preparations and CIBER-2’s preliminary flight performance.