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Effects of Coronal Density and Magnetic Field Distributions on the 2017 September 10 Global EUV Wave

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We investigate a global extreme ultraviolet (EUV) wave associated with a powerful solar eruption on 2017 September 10. The EUV wave is transmitted by both the north and south polar coronal holes (CHs) and propagates through the 360° solar disk, which is unprecedentedly observed by *SDO* and *STEREO A* from two opposite sides of the Sun. We obtain key findings on how the EUV wave interacts with low-density regions, a bright point (BP), active regions (ARs) and CHs: (1) the transmitted wave from the south CH is accelerated inside an on-disk low-density region with closed magnetic fields, which has not been reported before; (2) part of the primary wavefront turns around a BP when it approaches a low-density dim region near the BP; (3) the primary EUV wave is diffused and apparently halted near the boundaries of remote ARs, and no obvious transmitted secondary waves are detected beyond the ARs; (4) after the shock has left the Sun, the EUV wave is still observed and persistent for ∼50 minutes, and extends to a record scale of ∼360° in latitudes. These results provide insights into the effects of coronal density and magnetic field distributions on the evolution of a global EUV wave.