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Radio and EUV analysis of a shock wave reflected by an equatorial coronal hole

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We report the first unambiguous observational evidence in the radio range of the reflection of a coronal shock wave at the boundary of an equatorial coronal hole. The eruption occurred on 2011 August 11 above active region NOAA 11263 and was accompanied by an EUV wave, as evinced by AIA/SDO and EUVI/STEREO observations, and an anomalous reverse-drifting metric type II radio burst, interpreted as a signature of the reflected shock. By combining EUV images from AIA and EUVI with radio observations obtained by the Nancay Radioheliograph (NRH), we show that the reverse-drifting type II radio emission was produced at the intersection of the shock front, reflected at a coronal hole boundary, with an intervening low-Alfvén speed region characterised by an open field configuration. Moreover, we provide a data-driven reconstruction of the spatio-temporal evolution of the shock-accelerated electron beams produced by the reflected shock.

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