[포SE-54] COMPARISON OF HELICITY SIGNS IN INTERPLANETARY CMES AND THEIR SOLAR SOURCE REGIONS

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If all Coronal mass ejections (CMEs) have flux ropes, then the CMEs should keep their helicity signs from the Sun to the Earth according to the helicity conservation principle. We select 34 CME-ICME pairs whose source active regions (ARs) have continuous SOHO/MDI magnetogram data covering more than 24 hr without data gap during the passage of the ARs near the solar disk centre. The helicity signs in the ARs are determined by estimation of accumulating amounts of helicity injections through the photospheric surfaces in the entire source ARs. The helicity signs in the ICMEs are estimated by applying the cylinder model developed by Marubashi (2000) to 16 second resolution magnetic field data from the MAG instrument onboard the ACE spacecraft. It is found that 30 out of 34 events (88%) are helicity sign-consistent events, while 4 events (12%) are sign-inconsistent. Through a detailed investigation of the AR solar origins of the 4 exceptional events, we find that those exceptional events can be explained by the local AR helicity sign opposite to that of the entire AR helicity (2000 July 28 ICME), incorrectly reported solar source in CDAW (2005 May 20 ICME), or the helicity sign of the pre-existing coronal magnetic field (2000 October 13 and 2003 November 20 ICMEs). We conclude that the helicity signs of the ICMEs are quite consistent with those of the injected helicities in the AR regions where CMEs were erupted.

[포SE-55] 정지궤도 위성의 우주방사선 환경 분석

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위성이 우주에서 노출되는 우주방사선 환경은 위성의 임무궤도 및 임무 기간에 따라 크게 달라진다. 지구 주위의 자기장에 의해 갇혀있는 양성자 및 전자의 환경은 고도에 따라 밀도 및 분포의 차이를 보인다. 특히 밴 앨런 벨트 내의 경계부분을 넘어서는 높은 고도에서의 방사선 입자별 노출 환경은 저궤도의 환경과는 구성 및 영향성이 크게 다르다. 본 논문에서는 전자 밸트 고도에서 운영되는 정지궤도 위성의 우주방사선 입자 환경을 분석하였다. 지구 자기장에 갇힌 입자, 태양입자 및 외부은하 입자 환경을 모델별로 분석하였으며 각 입자별 Flux 및 Fluence 스펙트럼을 이용하여 총 이온화 조사량과 중이온 스펙트럼을 도출하였다.