(56%) and metric type II bursts (45%). Second, the SPE probability strongly depend on longitude: eastern (0%), center(45%), and western (33%) for X-class associated metric type II bursts, eastern (15%), center (55%), and western (50%) for X-class associated D-H type II bursts, eastern (17%), center (77%), and western (64%) for X-class associated m-to-km type II bursts. Third, for m-to-km type II bursts, the SPE probability increases with CME speed: 400km/s≤V <1000km/s (36%), 1000km/s ≤V<1500km/s (40%), 1500km/s≤V (66%). Finally, we expect that these results will be used for setting up more reasonable solar proton event forecasting models.

[VI-1-2] Relationship between plasma flows and the near-Earth tail dipolarizations

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The magnetic dipolarizations at the tail are often, if not always, associated with plasma flows of some magnitude. The associated flow direction is known to be earthward most often but not necessarily always. It is the primary goal of this paper to clarify the association between dipolarizations and the associated flow characteristics in general, but with a primary emphasis on tailward flow cases. Based on a number of dipolarizations that we identify at the near-Earth tail using the THEMIS tail observations we first confirm that dipolarizations can in general initiate in association with both earthward and tailward flows. Also, the main direction of the plasma flow, whether being earthward or tailward, is not critical in determining the intensity of the dipolarizations. We actually identify some events of tailward flow-associated dipolarizations that are as much intense as the earthward flow-associated events. The occurrence rate of the tailward flow-associated dipolarizations is mainly concentrated in the radial region of < 10 RE and in the local time region of 22-01 hr. However, its relative occurrence rate is rather low, ~19 % in the radial region and ~15.3 % in the local time region, as compared to that for the events associated with all other types of flows. Furthermore, the flow direction often changes no matter whether it is initially earthward or tailward near the onset time. As a consequence, the net transport of the magnetic flux during the main duration of the dipolarization process is earthward for nearly all of the dipolarizations that initiate with dominantly tailward flows near the onset, as is the case for those that initiate with dominantly earthward flows.

[VI-1-3] Kinetic Properties of Plasmas at Earth's Bow Shock

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Earth's bow shock is a transition layer across which properties of plasmas change irreversibly. Although some features of the bow shock are well described by continuities of fluxes of various macroscopic quantities, particle dynamics across the transition layer is very complicated. Observed phase space distributions show multiple ion beams and partially thermalized ions around the transition layer. In some cases, both hot magnetosheath ions and cold solar wind ions simultaneously exist in the magnetosheath. Electrons around the transition layer usually have flat-top distributions with temperature anisotropy. From the observed properties of the phase space distributions we will discuss thermalization processes that occur across the shock transition.

[VI-1-4] PIC simulation study of the turbulence of the Alfven ion-cyclotron waves induced by electromagnetic ion-cyclotron instability

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The turbulence in the nonlinear regime of the electromagnetic ion-cyclotron (EMIC) instability are investigated via a particle-in-cell (PIC) simulation. EMIC instability arises from anisotropic ion temperature and excites the Alfven ion-cyclotron (AIC) waves. The excited AIC waves undergo inverse-cascade via the nonlinear wave interaction of two AIC and one ion density modes. Induced ion density modes are the normal and second harmonic ion-acoustic (IA) waves. They have the same group velocity, but the second harmonic IA mode only generates the longitudinal electric field.

■ Session : 기기 I
4월 29일(금) 09:00 - 10:20 제2발표장

[IV-2-1] GMT 부경 FSM의 시험모델 개발 현황

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한국천문연구원은 Giant Magellan Telescope (GMT)의 부경 중의 하나인 Fast Steering Mirror (FSM)의 시험모델을 개발 중이다. 구경 1.06m의 비축 비구면 반사경을 시험제작하기 위하여 경량화 설계를 하였고 실제 가공 준비를 하고 있다. 반사경의 tip-tilt 제어를 위해서는 mathmatical model을 작성하고 실제 test-bed를 제작하였다. 이 논문에서는 FSM 시험모델의 개발