

We study the effect of magnetic field on the thermal instability in the cooling region behind an interstellar shock ( $v_s \simeq 10 \text{ km sec}^{-1}$ ). It is shown that small magnetic fields ( $\beta = 0.015$ , where  $\beta$  is the ratio of preshock magnetic pressure to the ram pressure) completely prevent the thermal instability. The preshock density perturbation grows until the logarithmic slope of the cooling function  $S \simeq 0.4$  and then decreases. Our results show that the sheet-like structure of  $\sim 0.03 \text{ pc}$  is possible if the preshock density inhomogeneity is  $\sim 0.1 \text{ pc}$ , although the density ratio is only 1 : 2.

### **Chromospheric Activity, Rotation Age on Lower Main Sequence Stars**

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New empirical relations between stellar CaII emission and rotation or age are derived by analyzing Wilson's CaII flux measurements (1968, 1978) of lower main sequence stars and then correlating them with their age and rotation rate.

It is found that stellar chromospheric emission decays smoothly with age as a star slows down rotationally, establishing that both the emission level and rotation rate decrease with the square root of age.

### **Heating of Umbral Chromospheres by Slow-Mode Acoustic Shock Waves**

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Making use of the "full" acoustic shock theory, we have calculated the shock dissipation rates of slow-mode acoustic waves travelling through umbral chromospheres permeated by uniform, vertical magnetic field and compared the computed dissipation rates with the radiative cooling rates estimated by Avrett (1981).

We found that the lower umbral chromospheres may be heated by the slow-mode acoustic waves with the period of several tens second. Comments on the use of the weak shock theory under sunspot conditions will be made.

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일시 : 1984年 11月 3日

장소 : 全羅南道學生科學館

### **An Analysis of Intermediate Population II Stars:**

#### **I. Metallicity and Interstellar Reddening**

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We derived the metallicity effects on the  $b-y$  colors as the first step of the calibration of  $uvby$ ,  $H_\beta$  photometry for the intermediate population II F-stars in Olsen's catalogue (1983). On the  $(\delta, b-y, \delta ml)$ -plane, we found that there is non-negligible interstellar reddening with 100 pc of the sun.

## Cross-polar Cap Potential Drop and Energy Coupling Function

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The cross-polar cap potential  $\Phi_{pc}$  on March 18 and 19, 1978 is determined by the numerical scheme developed by Kamide et al. (1981) on the basis of magnetic records from the six IMS meridian chain stations and others. The potential drop  $\Phi_{pc}$  thus determined is correlated with the energy coupling function and the  $AE$  index. It is found that  $\Phi_{pc} (kV) = 4.2 \times 10^{-17} \epsilon$  (erg/sec) for  $10^{18} \text{ erg/sec} < \epsilon < 3.5 \times 10^{18} \text{ erg/sec}$  and  $\Phi_{pc} (kV) = 36 + 0.089 AE(nT)$ . These results are in fair agreement with the satellite results obtained by Reiff et al. (1981).

### 소형천체망원경의 활용방법

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고등학교의 천체망원경 보유 및 운영 현황을 설문지를 통하여 조사하고, 교육과정 및 지구과학 교과서를 분석하여, 천문분야의 실험실습중 망원경과 관련된 중목의 문제점을 추출하고 개선점을 제안하였다.

개선의 방향으로서

- 1) 실습항목의 정선
- 2) 실습의 정량화
- 3) 실습방법의 상세화

등을 시도하였다.

### 고등학교 지구과학(I) 교과서에 수록된 천문학 용어 분석

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1981년 12월 31일 새로운 과학교육 과정의 제정과 더불어 금년부터는 지구과학을 I, II로 구분하여 시행하도록 하고 있다. 이중 지구과학 I은 모든 일반계 고등학교 학생이 필수로 4~6단위씩 이수하도록 되어있다.

본 연구는 현행 4종의 지구과학 I 문교부 검정교과서에 수록된 천문학용어의 상이한 표현과 용어의 공통적 출현을 비교 조사하고, 서술된 천문학 개념과 내용을 상호 비교하여 현행 지구과학 I 교과서가 안고 있는 문제점을 제시함으로써, 일선의 교사에게 교수에 필요한 자료를 제공하며, 앞으로 새로운 교과서의 편찬시 내용의 보완을 위한 기초자료를 제공하고, 통일된 천문학 용어의 제정, 사용을 제창코저 한다.