fields are separately calculated from a Big Bear magnetogram obtained under excellent seeing condition allowing high spatial resolution of 1.5 arcsec together with a high sensitivity reaching 2 Mx $cm^{-2}$. Seeing effect on power spectrum has been corrected using Korff's Modulation Transfer Function that was determined in our previous study of solar seeing quality of the manetogram observation.

In our results, the power spectra of both network fields lie in the inertial subrange for the most wavenumbers observable, in contrast to the earlier notion that they would lie beyond the inertial subrange (Nakagawa and Priest, 1971; Knobloch and Rosner, 1981). the network field spectrum is closely approximated by a power law with spectral index of -3/2 consistent with Kraichnan's (1959) theory for turbulent magnetic fields in equipartition with turbulent fluids. The -3/2 power law is followed by a more rapid decaying spectrum at wavenumbers larger than 3 Mm-1, which we attribute as the convective subrange based on an independent estimate of the Prandtl number under solar condition. The non-network field spectrum is better represented by the Kolmogorov law. Based on theory of Obukov (1949) and Corrsin (1951), it is concluded that non-network fields may act as a scalar contaminant passively responding to isotropic turbulent flows in the photosphere. A spectral maximum of non-neywork field spectrum locates at 0.7 $Mm^{-1}$, about the size of the largest granulation, which is thus interpreted as an evidence for the granulation origin of non-network fields. Turbulent parameters such as transport coefficients and the rate of kinetic energy dissipation per unit mass are derived. Implication of our results on distinct nature of network and non-network fields is discussed.

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## 태양광구영역에서의 광구벡터 자기장 진화

조경석, 김연한, 김갑성
경희대학교 우주과학과

편광 복사 전달계산을 수행함으로서 관측된 특정 파장에서의 편광정도를 자기장의 세기로 변환시키는 벡터 마그네토그래프의 이론적인 눈금조정을 수행하였다. 본 계산에서 대기모델은 Avertt(1990)의 VAL-C모델, Ding and Fang(1989)의 흑점 반영모델 그리고 Matby(1986)의 흑점본영모델에 대하여 각각 계산을 수행하였다.

열역학적 평형을 가정한 편광 복사 전달식을 수치계산하여 얻게된 편광복사선( Fe I 6302.5)의 스톡스 선윤곽들에 대해 투과대역이 0.125A 인 가우스 분포를 가정함으로서 Lyot 필터의 투과효과를 고려하였다. 자기장의 세기와 자력선의 기울기 변화에 따른 각 스톡스 윤곽을 계산하고 자기장의 세기에 따른 직선, 원편광 정도를 나타내는 눈금조정 곡선을 결정하였다. 이 결과를 Mitaka관측소에서 사용하고 있는 관측자료분석 소프트웨어에 적용함으로서 활동영역에서의 벡터자기장 지도를 만들었다.

41개의 크고 작은 플레어 활동들이 관측된 지난 1993년 12월 24일부터 29일까지의 가장

큰 활동영역을 지속적으로 관측한 Mitaka 관측소의 편광자료를 분석하여 플레어 발생 전, 후의 Fe I 6302.5 분광선이 형성되는 광구 지역에서의 자기장 변화를 조사하였다. 그리고 YOHKOH X-ray전면상 자료를 통해 코로나 지역에서의 자기장 구조와 광구 벡터자기장 분포를 비교함으로서 활동영역의 형태학적 진화와 자기장의 진화모습을 조사하였다. 벡터 자기장 지도를 해석함에 있어 플레어 발생시간과 규모는 Compton GRO 의 25-100keV 채널에서 측정된 Flare Light Curve들을 이용하였다.

## Cornal Temperature, Density, and Nonthermal Velocity Derived from SERTS EUV Spectra*

Y. J. Moon, H .S. Yun, J. Y. Jang
Department of Astronomy, Seoul National University
Y. D. Park
Bohyunsan Optical Astronomy Observatory, KAO
J. M. Davila
Laboratory for Astronomy and Solar Physics NASA/Goddard Space Flight Center

We have analyzed solar EUV spetral data of AR 6615 obtained from Solar extreme Ultraviolet Roket Telescope and spectrograph (SERTS) to derive the cornal temperature, electron density, and nonthermal velocity. The cornal temperature is determined from the intensity ratio of Fe XVI 335.4 to Fe XIV 334.2 by using the temperature-line ratio relation(Brosius 1995). The temperature is found as ~˜24 × $10^6$ K with no systematic difference between the active region and adjacent quiet region. With the use of the density-line ratio telation(Bhathia rt al.1994), the electron density above the active region is estimated as $\sim 5 \times 10^9$ $cm^{-3}$, which is found to be two times higher than that above the quiet region. We also estimated the nonthermal velocity by subtracting the spectral width of thermal and instrumental temperatures from the observed spectral line width, to find it as ~20km $s^{-1}$.

It has been known that nonthermal velocity should increase outwards up to the transition region, but it remained uncertain whether it keeps increasing or decreasinf outwards. the nonthermal velocity found in our study refers to a coronal region corresponding to the ionization equilibrium temperature of 2.2-2.2 $\times 10^6$K, higher than the coronal height ever investigated, and supports the notion that nonthermal velocity would decline outwards above the transition region.

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