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*

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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 ~5 × 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 × 10^6K, 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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