

Fundamental characteristics of field-aligned auroral acceleration derived from AKR spectra

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This paper examines long term AKR spectra observed by the Polar satellite to prove comprehensive features of field-aligned auroral acceleration and to give observational constraints for the theoretical mechanism of acceleration at substorm. The remote observations of substorm phenomena through auroral radio waves from the high altitude polar magnetosphere disclosed some fundamental characteristics of vertical auroral acceleration region and provide new information on the field-aligned potential formation process. Furthermore, they reveal a new aspect of relationship between the plasma state in the plasma sheet and formation of auroral acceleration.