

## サブオーロラ帯におけるオーロラの高速撮像

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### High-speed imaging of aurora at subauroral zone

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Solar maximum is coming, and the occurrence of magnetic storms is increasing. It is expected that bright auroral features often extend to subauroral zone during magnetic storms. We have conducted high-speed imaging of aurora at auroral zone (Kataoka et al., 2011a; 2011b; 2012), and it has been unknown how the bright auroral features differently behave at subauroral zone. We therefore installed a high-speed imaging system at AUGO2 in late September 2012. The high-speed imaging observation will be continued until April 2013. AUGO2 is located at subauroral zone, and the geographic latitude and longitude is N54.6 and W113.6, respectively. The magnetic latitude is 61 deg and the magnetic midnight is approximately 8 UT. The imaging system consists of Hamamatsu EMCCD camera and 50mm F0.95 lens, pointing toward the magnetic zenith. The field-of-view is 9.3 by 9.3 deg. We use a BG3 filter to filter out slow emissions such as 557.7 nm and 630.0 nm. As the first light, a very fast pulsating patch transiently appeared at magnetic zenith during the storm main phase (Dst = -122 nT) at 0233 UT on 2012/10/01. It was about the sunset, and it was about expansion phase of 1000 nT substorm. Interestingly, the fast pulsating patch looks similar to the one we found last winter (Kataoka et al., 2012), although background situations (latitude, local time, storm-substorm phase) are different. We report further results and discussion of the high-speed imaging at subauroral zone, based on a tentative hypothesis that the similarities may indicate that such fast variations are ubiquitous in bright aurora.

太陽極大期が近付いており、磁気嵐の頻度も増えている。磁気嵐では明るいオーロラ構造がサブオーロラ帯まで伸びてくる。これまで我々は、オーロラ帯においてオーロラの高速撮像を行ってきたが、明るいオーロラ構造がサブオーロラ帯でどう振舞うかは知られていない。そこで我々は2012年9月、アサバスカ大学地球物理観測所2 (AUGO2)に高速撮像カメラを設置した。観測は2013年4月まで継続する。AUGO2はサブオーロラ帯に位置しており、地理緯度経度はN54.6、W113.6、磁気緯度は61度、磁気的な真夜中は世界時8時である。撮像システムは、浜松EMCCDに50mmF0.95レンズを取り付け、磁気天頂に向け、視野は9.3 x 9.3度とした。BG3フィルタを用いて557.7nmや630.0nmの遅い発光を消している。2012/10/01 0233 UTには第一光として、速い脈動パッチが磁気嵐主相サブストーム拡大相の磁気天頂で観測された。興味深いことに、緯度やローカルタイムが異なるにもかかわらず、この速い脈動パッチはKataoka et al. (2012)で報告された高速脈動オーロラと似ている。オーロラの至るところで未知の速い変化が存在するというこの類似性が示唆しているかもしれないとの試みの仮説を立て、本講演では、サブオーロラ帯における高速撮像の更なる結果と考察について報告する。

### References

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