REPORT BY STUDENTS.
Number of pages: 10-15 including figures.
Deadline: 15.01.2012

PART 1: Calibration
PART 2: Observations of aurora

GUIDELINE FOR PART 1: CALIBRATION

- Make a short introduction to why we need to conduct calibrations?
- Inter calibration: Calculate the lamp spectra in calibrated units and compare them to each other. Is the certificates in agreement? Can we trust the different Rayleigh's – error analysis?
- Explain the experimental setup of DSLR camera calibration. Show the obtained spectral responsivity and quantum efficiency of your camera.
- Compare and discuss your results with the 2 other cameras that were calibrated.

GUIDELINE FOR PART 2: WHAT TO STUDY FROM THE DATA

- Give the basic information of the optical instruments you are using and specify the important parameters (e.g. field-of-view, measured wavelengths, temporal resolution, etc). For ASC, check directions (sometimes East is on the right, sometimes on the left side)!
- Identify the type of aurora you are studying (diffuse/discrete, quiet/active, rayed, etc.)
- Check the MLT-time and latitude to identify the phenomenon
    - dayside aurora
    - cusp aurora
    - polar cap arcs
    - auroras expanding from the main oval during sub-storm
    - pulsating aurora
    - ...
- Show the measurements in a suitable format (as figures) and think whether they give a coherent picture of your object and how the measurements complement each other.
- What kind of temporal variation the data shows over the study period?
- **Tima Sergienko has sent you a mat-file containing red (630.0 nm), green (557.7 nm) and blue (427.8 nm) volume emission rates for different electron energies => calculate the intensity ratios as a function of energy. Apply those to real data, when aurora is in the magnetic zenith to estimate the characteristic energy of aurora!**
- If you have radar data available, study the electron density altitude profile. Compare the Ne profile peak altitude with the characteristic energy deduced from optical measurements
- Check under what kind of geophysical conditions you observe the auroral structures:
    - Solar wind properties: IMF direction, SW speed and density
    - AE and Kp index (possibly Dst)
- Write some kind of conclusions. Does the aurora behave as you expect (or has been reported earlier)? Do you see something interesting that could be a subject of a more detailed study?

Important: Use your own words, to not copy and paste from the group work.