

4th Cluster and THEMIS workshop

7-12 November 2016
Palm Springs, USA

PROGRAM

	Session 1	Session 2	Session 3	Session 4
Monday 7 Nov.	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30
Tuesday 8 Nov.	09:00-10:30	11:00-12:30	14:00-16:00	Posters: 16:00-18:00
Wednesday 9 Nov.	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30 18:30 Dinner Banquet
Thursday 10 Nov.	09:00-10:30	11:00-12:30	14:00-15:30	16:00-18:00
Friday 11 Nov.	Cluster SWT/SOWG			
Saturday 12 Nov. am	Cluster SOWG			

Monday 7 November 2016

08:00	Registration
08:50	Opening
	<i>Session: Dayside interactions</i>
	Chair: C. Philippe Escoubet
09:00-09:15	Multipoint analysis of compressive fluctuations in the fast and slow solar wind O.W. Roberts ¹ , X. Li ² , Y. Narita ³ , C.P. Escoubet ¹ , H. Laakso ^{1,4}
09:15-09:30	Comparison of the bow shock and ICME shocks G. K. Parks ¹ , E. Lee ² , S. Y. Fu ³ , Z. W. Yang ⁴ , Y. Liu ⁴ , I. Dandouras ⁵ , H. Reme ⁵

- 09:30-09:55 **Different types of foreshock and their connection with foreshock transients (Invited)**
Primoz Kajdic, Xochitl Blanco-Cano, Diana Rojas-Castillo, Nojan Omid
- 09:55-10:10 **A comparison of ion ramps of the bow shock and interplanetary shocks: Cluster, THEMIS and Spektr-R**
O. Goncharov (1), O. Kruparova (2), J. Safrankova (1), Z. Nemecek (1), L. Prech (1), and G. N. Zastenker (3)
- 10:10-10:35 **Hot flow anomaly Generated ULF Waves in the Magnetosphere (Invited)**
L. L. Zhao, H. Zhang, Q.-G. Zong
- 10:35-11:00 **COFFEE BREAK**

Chair: Vassilis Angelopoulos
- 11:00-11:15 **The source of backstreaming ions in a young Hot Flow Anomaly**
O.L.Vaisberg, S.D.Shuvalov, A.Yu.Shestakov, Y.M.Golubeva
- 11:15-11:40 **Relativistic electrons produced by foreshock disturbances (Invited)**
Lynn B. Wilson III; David G. Sibeck; Drew L. Turner; Adnane Osmane; Damiano Caprioli; Vassilis Angelopoulos
- 11:40-11:55 **Reflected electrons and electrostatic waves observed by Cluster in the foreshock**
Jan Soucek (1), David Pisa (1), Ondrej Santolik (1,2)
- 11:55-12:10 **Effects of Interplanetary Shocks on the Lunar Wake**
Xiaoyan Zhou, Chris Russell, Vassilis Angelopoulos
- 12:10-12:25 **Upstream transients and their influence on the bow shock and magnetosheath**
Xochitl Blanco-Cano and Primoz Kajdic
- 12:25-14:00 **LUNCH**

Chair: Iannis Dandouras
- 14:00-14:25 **On the importance of magnetosheath high-speed jets (Invited)**
Ferdinand Plaschke, Heli Hietala
- 14:25-14:40 **Magnetic clouds in the Earth's magnetosheath: a statistical study**
L. Turc (1), D. Fontaine (2), C.P. Escoubet (1), E. Kilpua (3)
- 14:40-15:05 **What Controls Dayside Reconnection (Invited)**
Joe Borovsky

- 15:05-15:30 **Electron-Scale Dissipation at the Dayside Magnetopause from MMS Measurements (Invited)**
 J. L. Burch(1), J. M. Webster(2), K. J. Genestreti(3), T. D. Phan(4), R. B. Torbert(5), B. L. Giles(6), M. Hesse(6), R. E. Ergun(7), L.-J. Chen(8), S. Wang(8)
- 15:30-16:00 **COFFEE BREAK**
 Chair: Jimmy Raeder
- 16:00-16:25 **Cluster Observations of Magnetopause Reconnection Under High Flow-Shear Conditions (Invited)**
 F. D. Wilder (1), S. Eriksson (1), K. J. Trattner (1), P. A. Cassak (2), C. E. Doss (2), C. M. Komar (3), S. A. Fuselier (4), B. Lybekk (5)
- 16:25-16:40 **Ion Larmor Radius Effects near a Reconnection X-line at the Magnetopause: THEMIS Observations and Simulation Comparison**
 T. D. Phan, M. A. Shay, C. C. Haggerty, J. T. Gosling, J. P. Eastwood, M. Fujimoto, K. Malakit, F. S. Mozer, P. A. Cassak, M. Oieroset, and V. Angelopoulos
- 16:40-17:05 **Cluster observations of magnetopause as a rotational discontinuity: open issues on MHD reconnection tests (Invited)**
 A. Blagau (1), G. Paschmann (2), B. Klecker (2), and O. Marghitsu (1)
- 17:05-17:30 **Recent results about kinetics of electron holes in magnetopause reconnection observed by Cluster and MMS (Invited)**
 D. B. Graham, Yu. V. Khotyaintsev, A. Vaivads, M. Andre, +MMS team

**Tuesday
8 November 2016**

Session: Dayside interactions (continue)

Chair: Andrew Fazakerley

- 09:00-09:25 **The Response Time of the Magnetopause Reconnection Location to changes in the Solar Wind: MMS Case Study (Invited)**
 K.J. Trattner, J. Burch, R. Ergun, S.A. Fuselier, R.G. Gomez, W. Lewis, B. Mauk, S.M. Petrinec, C.J. Pollock, T.D. Phan, F.D. Wilder and D.T. Young
- 09:25-09:50 **Flux Ropes Dynamics at the Subsolar Magnetopause: MMS Observations and Kinetic Simulations (Invited)**
 Meng Zhou, Jean Berchem, Mostafa El-Alaoui, Raymond J Walker, Giovanni Lapenta, Emanuele Cazzola, David Schriver, Robert L Richard, Haoming Liang, Melvyn L Goldstein, Xiaohua Deng, Ye Pang, Christopher T Russell, Robert J Strangeway, Cong Zhao, William R Paterson, Barbara L Giles, Craig J Pollock, Benoit Lavraud, Per-Arne Lindqvist, Göran Marklund, Yuri V Khotyaintsev, Robert E Ergun, Roy B Torbert, James L Burch

- 09:50-10:05 **Locating dayside magnetopause reconnection with exhaust ion distributions**
Jeffrey Broll (1,2), Stephen Fuselier (2,1), Karlheinz Trattner (3)
- 10:05-10:30 **Low-energy ions in the magnetosphere: Statistics and consequences (Invited)**
M. Andre(1), W. Li (1), S. Toledo-Redondo (2), Yu. V. Khotyaintsev (1), A. Vaivads (1), D. B. Graham (1), C. Norgren (1,3), J. Burch (4), P.-A. Lindqvist (5), G. Marklund (5), R. Ergun (6), R. Torbert (4,7), W. Magnes (8), C. T. Russell (9), B. Giles (10), T. E. Moore (19), M. O. Chandler (11), C. Pollock (10), D. T. Young (4), L. A. Avanov (10), J. C. Dorelli (10), D. J. Gershman (9, 12), W. R. Paterson (10), B. Lavraud (13, 14), Y. Saito (15), A. I. Eriksson (1), and K. Li (16)
- 10:30-11:00 **COFFEE BREAK**

Chair: Tai Phan
- 11:00-11:25 **Oxygen and cold ions in magnetic reconnection (Invited)**
Shan Wang, Lynn M. Kistler, Christopher G. Mouikis, and Li-Jen Chen
- 11:25-11:50 **Kelvin-Helmholtz waves at Earth's magnetopause (Invited)**
Shiva Kavosi, Joachim (Jimmy) Raeder and Harlan Spence
- 11:50-12:15 **MMS Observations of Magnetic Reconnection Associated with Kelvin-Helmholtz Waves (Invited)**
S. Eriksson(1), B. Lavraud(2,3), F. D. Wilder(1), J. E. Stawarz(1,12), B. L. Giles(4), J. L. Burch(5), W. Baumjohann(6), R. E. Ergun(1), P.-A. Lindqvist(7), W. Magnes(6), C. J. Pollock(4), C. T. Russell(8), Y. Saito(9), R. J. Strangeway(8), R. B. Torbert(10), D. J. Gershman(4), Yu. V. Khotyaintsev(11), J. C. Dorelli(4), S. J. Schwartz(1,12), L. Avanov(4), E. Grimes(8), Y. Vernisse(2,3), A. P. Sturmer(1), T. D. Phan(13), G. T. Marklund(7), T. E. Moore(4), W. R. Paterson(4), and K. A. Goodrich(1)
- 12:15-12:30 **A new view on drivers of magnetopause locations**
Z. Nemecek (1), J. Safrankova (1), J. Simunek (2), J.-H. Shue (3), and A. A. Samsonov (4)
- 12:30-14:00 **LUNCH**

Chair: Lucile Turc
- 14:00-14:15 **Science Objectives for Soft X-ray Missions to the Earth's Magnetosphere**
D. G. Sibeck1, H. K. Connor1, C. P. Escoubet2, G. Branduardi-Raymont3, C. Wang4, and S. Sembay5
- 14:15-14:30 **New imaging of the Sun-Earth connection: the SMILE mission**
C. P. Escoubet1, G. Branduardi-Raymont2, C. Wang3, S. Sembay4, L. Dai3, L. Li3, E. Donovan5, E. L. Spanswick5, D. Sibeck6, A. Read4, D. Rebuffat1, A. Wielders1, J. Zheng3, J. Romstedt1, W. Raab1, D. Lumb1

14:30-14:45 **The role of turbulence in heating and accelerating particles: the THOR mission**
C. P. Escoubet¹, A. Vaivads², A. Retino³, Y. Khotyaintsev², J. Soucek⁴, F. Valentini⁵, C. Chen⁶, A. Fazakerley⁷, B. Lavraud^{8,9}, F. Marcucci¹⁰, Y. Narita¹¹, R. Vainio¹², T. Voirin¹, A. Wieters¹, N. Boudin¹, J. Romstedt¹

Session: The inner magnetosphere

14:45-15:10 **The MAARBLE project: investigating the properties of electromagnetic waves and their influence on the dynamic evolution of the Van Allen belts (Invited)**
Ioannis A. Daglis (1,2), Sebastien Bourdarie (3), Richard B. Horne (4), Yuri Khotyaintsev (5), Ian R. Mann (6), Ondrej Santolik (7), Drew Turner (8), Georgios Balasis (2), Benjamin Grison (7)

15:10-15:35 **The geospace exploration project: ERG (Invited)**
Y. Miyoshi(1), I. Shinohara(2), T. Takashima(2), K. Asamura(2), H. Matsumoto(2), N. Higashio(2), T. Mitani(2), S. Kasahara(3), S. Yokota(2), S-Y. Wang(4), Y. Kazama(4), Y. Kasahara(5), Y. Kasaba(6), S.Yagitani(5), A. Matsuoka(2), H. Kojima(7), Y. Katoh(6), K. Shiokawa(1), K. Seki(3), M. Fujimoto(2), T. Ono(6), and ERG project team

15:35-16:00 **Open discussion**

16:00-18:00 **POSTER SESSION (with COFFEE BREAK)**

**Wednesday
9 November 2016**

Session: The inner magnetosphere (continue)

Chair: Natalia Ganushkina

09:00-09:15 **Interaction of ULF waves with different ion species: pitch angle and phase space density implications**
Q.-G Zong, Jie Ren, X. Z. Zhou, R. Rankin, Y. F. Wang

09:15-09:30 **On the Elegant Dynamics of the Ultra-relativistic Van Allen Radiation Belt: How ULF Wave Transport Explains an Apparently Diverse Response to Solar Wind Forcing**
Mann¹, Ian R., L. G. Ozeke¹, K. R. Murphy², S. Claudepierre³, I.J. Rae⁴, D.K. Milling¹, A. Kale¹, and D. N. Baker⁵

09:30-09:45 **MMS Observations of Energetic Electron Microinjections**

J. F. Fennell(1), D. L. Turner(1), C. L. Lemon(1), A. Jaynes(2), J. B. Blake(1), J. H. Clemmons(1), D. N. Baker(2), B. H. Mauk(3), I. J. Cohen(3), H. E. Spence(4)

09:45-10:10

Cluster observations of magnetosonic waves in the inner magnetosphere. (Invited)

S. N. Walker(1), K. H. Yearby(1), S. A. Boardsen(2,3), D. G. Sibeck(3), and M. A. Balikhin(1)

10:10-10:25

Can EMIC triggered emissions be generated off the magnetic equatorial plane?

Benjamin Grison (1), Hugo Breuillard (2), Ondrej Santolik (1), Nicole Cornilleau-Wehrlin (3) and Miroslav Hanzelka (1)

10:25-11:00

COFFEE BREAK

Chair: David Sibeck

11:00-11:25

Fine structure embedded in whistler mode chorus wave packets: observations of Cluster and Van Allen Probes in the inner magnetosphere (Invited)

Ondrej Santolik 1,2; Ivana Kolmasova 1,2; Jolene Pickett 3, William S. Kurth 3, George B. Hospodarsky 3, Donald A. Gurnett 3, Craig A. Kletzing 3, and Scott R. Bounds 3

11:25-11:50

The inner magnetosphere ion composition (Invited)

C. G. Mouikis, L. M. Listler

11:50-12:15

Oblique Whistler-Mode Waves in the Earth's Inner Magnetosphere (Invited)

Oleksiy Agapitov, Anton Artemyev, Didier Mourenas, Vladimir Krasnoselskikh, Forrest Mozer

12:15-12:30

Cof electric radial diffusion coefficient of radiation belt electrons with in situ electric field measurements by THEMIS

Wenlong Liu, Weichao Tu, Xinlin Li

12:30-14:00

LUNCH

Chair: Ondrej Santolik

14:00-14:15

Plasmaspheric plume analysis during the 2013 Cluster close separation campaign, augmented with Van Allen Probes data and a plasmopause test particle simulation

F. Darrouzet (1), J. De Keyser (1), P. M. E. Decreau (2), J. Goldstein (3), W. Kurth (4), S. De Pascuale (4), O. Santolik (5,6)

14:15-14:30

Lightning whistlers triggering plasmaspheric hiss: multi-spacecraft observations and ray-tracing analysis

I. Kolmasova 1, 2; O. Santolik 1, 2; M. Hanzelka 2, 1; J. S. Pickett 3; W. S. Kurth 3, and C. A. Kletzing 3

- 14:30-14:45 **Erosion and refilling of the plasmasphere studied by neural network based three-dimensional plasmaspheric model**
Xiangning Chu (1), Jacob Bortnik (1), Wen Li (1), Vassilis Angelopoulos (2), Richard M Thorne (1), Richard Eugene Denton (3), John Douglas Menietti (4), Yongli Wang (5)
- 14:45-15:10 **Understanding the radiation environment in the Earth's inner magnetosphere (Invited)**
N. Ganushkina, and SPACESTORM and PROGRESS teams
- 15:10-15:35 **Electric fields associated with 100s keV electron enhancements in the slot region (Invited)**
Sam Califf, Xinlin Li, Hong Zhao, Allison Jaynes and David Malaspina
- 15:35-16:00 **COFFEE BREAK**

Chair: Drew Turner

Session: Magnetotail processes and Substorms
- 16:00-16:25 **Particle Acceleration in Solar Flares and Terrestrial Substorms (Invited)**
M. Oka
- 16:25-16:40 **An Analysis of Magnetic Reconnection Events and their Associated Auroral Enhancements**
N. A. Case(1), A. Grocott(1), S. E. Milan(2), T. Nagai(3), and J. P. Reistad(4)
- 16:40-16:55 **Magnetotail fast flows near lunar orbit**
Kiehas Stefan(1), Runov Andrei(2), Angelopoulos Vassilis(2), Heli Hietala
- 16:55-17:10 **Magnetotail Current Sheet Structure from Cluster and THEMIS Observations**
A. Artemyev, A. Runov, V. Angelopoulos
- 17:10-17:35 **Studying magnetic reconnection using the FOTE method: Cluster and MMS results (Invited)**
Huishan Fu
- 18:30-20:30 Banquet Dinner- Pasadena Room (next door to meeting)

**Thursday
10 November 2016**

Session: Magnetotail processes and Substorms (continue)

Chair: Andrei Runov

- 09:00-09:25 **Electric Fields at the Dipolarization Fronts: Cluster and MMS observations (Invited)**
Yuri Khotyaintsev, Andris Vaivads, Andrey Divin, Daniel Graham, Mats Andre, Cluster Team, MMS Team
- 09:25-09:40 **Electron Injections: A Study of Electron Acceleration by Multiple Dipolarizing Flux Bundles Using an Analytical Model**
C.Gabrielse, C. Harris, V.Angelopoulos, A.Artemyev, A.Runov
- 09:40-10:05 **Ion Heating and Anisotropy in Magnetotail Reconnection Jets (Invited)**
H. Hietala(1,2), J. P. Eastwood(2), J. F. Drake(3), T. D. Phan(4), A. V. Artemyev(1), R. Mistry(2), V. Angelopoulos(1)
- 10:05-10:30 **Electron field-aligned anisotropy and dawn-dusk magnetic field: nine years of Cluster observations in the Earth magnetotail. (Invited)**
E. Yushkov (1,2), A. Petrukovich (1), A. Artemyev (1,3), R. Nakamura (4)
- 10:30-11:00 **COFFEE BREAK**

Chair: Misha Balikhin
- 11:00-11:25 **CLUSTER view on PSBL ion beams in the Earth's magnetotail (Invited)**
Grigorenko E.E., L.M. Zelenyi, M.S. Dolgonosov, E.A. Kronberg, P.W. Daly
- 11:25-11:50 **Does the cross-scale energy transport associated with asymmetric growth of Kelvin-Helmholtz Instability explain the origin of plasma sheet temperature asymmetry of cold-component ions? (Invited)**
Nykyri, K. and Moore, T.W. and Dimmock, A.P. and Henry, Z.
- 11:50-12:05 **Kelvin-Helmholtz instability: lessons learned from Cluster & Themis and way forward**
Arnaud Masson (1), C. Philippe Escoubet (2), Harri Laakso (1)
- 12:05-12:20 **Conjugacy of Kelvin-Helmholtz Instability and Ps6 during the St. Patrick's Day 2013 Magnetic Storm Event**
Martin Connors
- 12:20-12:35 **ARTEMIS observations of terrestrial ionospheric molecular ions at the Moon**
A. R. Poppe^{1,2}, M. O. Fillingim¹, J. S. Halekas^{2,3}, J. Raeder⁴ and V. Angelopoulos⁵
- 12:35-14:00 **LUNCH**

Chair: Toshi Nishimura
- 14:00-14:25 **Characterization of energetic O⁺ and H⁺ ions in the plasma sheet (Invited)**
E. A. Kronberg (1,2), E. E. Grigorenko (3), P. W. Daly (1), H. Luo (4), Y. Khotyaintsev (5)

- 14:25-14:50 **Plasma sheet drivers of currents and ionospheric conductivity effects (Invited)**
E.V. Panov,¹ W. Baumjohann,¹ R.A. Wolf,² R. Nakamura,¹
V. Angelopoulos,³ J. M. Weygand,³ M.V. Kubyshkina⁴
- 14:50-15:15 **Distribution of Region 1 and 2 currents in the quiet and substorm time plasma sheet from THEMIS observations (Invited)**
Jiang Liu, V Angelopoulos, Xiangning Chu, RL McPherron
- 15:15-15:30 **Tail - Ionosphere Connections**
Joachim Raeder, Bashi Ferdousi, and W. Douglas Cramer
- 15:30-16:00 **COFFEE BREAK**

Chair: Arnaud Masson
- 16:00-16:15 ~~**A case study on the FAC carriers in the magnetotail in substorm time**~~
~~J. K. Shi ¹, Z. W. Cheng ¹, J. C. Zhang ², L. M. Kistler ², G. Parks ³, M. Dunlop ⁴, I. Dandouras ⁵, H. Rame ⁵, A. Fazakerley ⁶~~
- 16:15-16:30 **Multi-point studies of the aurora and associated cavity by Cluster, and of BBFs and magnetosheath jets by Cluster and MMS**
Goran Marklund (1), Tomas Karlsson (1), Love Alm (2), and Per-Arne Lindqvist (1),
- 16:30-16:55 **Occurrence of auroral omega bands (Invited)**
James M. Weygand, Noora Partamies, and Liisa Juusola
- 16:55-17:10 **Statistical properties of substorm auroral onset beads/rays**
Toshi Nishimura¹, Jian Yang², Phil Pritchett³, Ferdinand Coroniti³, Eric Donovan⁴, Larry Lyons¹, Richard Wolf², Vassilis Angelopoulos⁵, Stephen Mende⁶
- 17:10-17:35 **The ionosphere as ginormous particle detector (Invited)**
Joshua Semeter, Nithin Sivadas, Hassan Akbari, Michael Hirsch, John Swoboda
- 17:35-18:00 **TREx - an ASI and Riometer network designed to take THEMIS-ASI 'to the next level (Invited)**
Eric Donovan

POSTERS

- 100 **Determination of dynamics of turbulence upstream and downstream of the Earth's Bow shock, using Cluster measurements**

Stefanos Giagkiozis, Simon N. Walker, Keith Yearby

- 101 **Rapid changes in the solar wind proton velocity distribution function observed with CIS**
O. Roberts 1, X. Li 2, D. Perrone 3, C.P Escoubet1
- 102 **Variability of the electron power spectrum in the solar wind**
O. Roberts 1, A. Walsh 2, C.P. Escoubet 1, P. Kajdic 3
- 103 **Turbulence in the terrestrial foreshock: Multipoint observations**
A. Pitna, J. Safrankova, Z. Nemecek
- 104 **Magnetic Curvature Analysis on Kelvin-Helmholtz Waves: a MHD Simulation Study**
R. Kieokaew (1), C. Foullon (1), B. Lavraud (2)
- 105 **Kelvin-Helmholtz wave at the subsolar magnetopause boundary layer under radial IMF**
K. Grygorov (1), Z. Nemecek (1), J. Safrankova (1), L. Prech (1), G. Pi (2), J.-H. Shue (2)
- 106 **Shape of the dayside equatorial magnetopause**
J. Safrankova (1), J. Simunek (2), Z. Nemecek (1), and L. Prech (1)
- 107 **New tools for multi-mission data analysis with Cluster: SPEDAS, OVT and CSA 2.0**
Helen Middleton, Arnaud Masson and the CSA Development Team
- 108 **Correcting the RAPID Imaging Electron Spectrometer data set for long-term sensitivity decrease**
E. Vilenius, P. Daly, E. Kronberg
- 109 **Statistical survey of quasi-periodic VLF emissions observed in the inner magnetosphere conjugated with geomagnetic field fluctuations measured on the ground.**
M. Hajos (1), O. Santolik (1,2), F. Nemecek (2), A. Demekhov (3,4), M. Parrot (5), T. Raita (6)
- 110 **Multipoint observations of long-lasting Pc4 pulsations in the dayside magnetosphere**
G. I. Korotova^{1,2}, D. G. Sibeck³, M. J. Engebretson⁴, J. R. Wygant⁵, S. Thaller⁵, H. E. Spence⁶, C. A. Kletzing⁷, V. Angelopoulos⁸, R. J. Redmon⁹
- 111 **Influence of a guide BY field on the magnetotail current sheet structure and particle dynamics**
E.E. Grigorenko, A.Yu. Malykhin, H. V. Malova, L.M. Zelenyi
- 112 **Substructures within a dipolarization front revealed by high-temporal resolution Cluster observations**
Yao, Zhonghua; Fazakerley, AN; Varsani, A; Rae, IJ; Owen, CJ; Pokhotelov, D; Forsyth, C; Guo, RL; Bai, SC; Yao, ST; Doss, N
- 113 **Temporal and spatial evolution of magnetotail dipolarization fronts in the near-Earth plasma sheet**
D. Schmid, R. Nakamura, F. Plaschke, M. Volwerk and W. Baumjohann

- 114 **Comparing and contrasting dispersionless injections at geosynchronous orbit during a substorm event**
E. A. Kronberg (1,2), E. E. Grigorenko (3), D. L. Turner (4), G. Reeves (5),
P. W. Daly (1), Y. Khotyaintsev (6)
- 115 **IMF dependence of energetic oxygen and hydrogen ion distributions in the near-Earth plasma sheet**
H. Luo(1, 2, 6), E. A. Kronberg(2, 3), K. Nykyri(4), K. J. Trattner(5), P. W. Daly(2),
G. X. Chen(1, 6), A. M. Du(1, 6)
- 116 **A multi-satellite survey of convection in the terrestrial magnetotail**
N. A. Case(1), A. Grocott(1), and S. Haaland(2)
- 117 **The connection between small scale polar cap arcs and the LLBL**
Maggiolo, R. (1), D. Fontaine(2), K. Hosokawa(3), L. Maes(1), Y. Zhang(4), R.
Fear(5), J. Cumnock(6), A. Kozlovsky(7), A. Kullen(8), S. E. Milan(9), and M.
Echim(1,10)
- 118 **North-south asymmetries in cold ion outflow and lobe density.**
S.Haaland (1), L.Maes (2), K.Laundal (3), B.Lybekk (4), A.Pedersen (4),
- 119 **Solar zenith angle dependency, seasonal variations and N-S asymmetry of the polar wind**
Lukas Maes (1), Romain Maggiolo (1), Mats Andr  (2), Anders Eriksson (3),
Stein Haaland (4,5), Kun Li (4)
- 120 **Chorus emission source spatial scales in the terrestrial radiation belts from multi-point spacecraft measurements**
Oleksiy Agapitov