

5th Cluster-THEMIS workshop

24-28 September 2018

Chania, Creta, Greece

Programme

	Session 1	Session 2	Session 3	Session 4
Monday 24 Sept.	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30
Tuesday 25 Sept.	09:00-10:30	11:00-12:30	Poster	Poster
Wednesday 26 Sept.	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30
Thursday 27 Sept.	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30
Friday 28 Sept.	Cluster SWT	Cluster SWT	Cluster SWT	

Monday 24 September 2018

08:30	Registration
09:00	<p>Welcome: Philippe Escoubet</p> <p><i>Session: Solar wind and coupling to the magnetosphere</i></p> <p>Chair: Philippe Escoubet</p>
09:05-09:20	<p>Interplanetary Shocks in the 24th Solar Cycle: Observations from ARTEMIS Spacecraft Xiaoyan Zhou 1, Christopher T. Russell¹, Ed Smith², Vassilis Angelopoulos¹</p>
09:20-09:35	<p>Foreshock wave properties during magnetic cloud events L. Turc (1), M.O. Archer (2), O.W. Roberts (3), M. Battarbee (1), T. Brito (1), U. Ganse (1), M. Grandin (1), Y. Pfau-Kempf (1) and M. Palmroth (1,4)</p>
09:35-09:55	<p>Particle acceleration inside foreshock transients (Invited) Terry Liu 1, Vassilis Angelopoulos 1, San Lu 1, Heli Hietala 2, Lynn Wilson III 3, Yu Lin 4, X. Y. Wang 4</p>

- 09:55-10:15 **The 2D structure of foreshock driven Pc5 waves observed by THEMIS satellite and ground-based imager (Invited)**
 Boyi Wang¹²; Yukitoshi Nishimura²³; Hui Zhang⁴; Xiao-Chen Shen²⁵; Larry Lyons¹; Vassilis Angelopoulos⁶; Yusuke Ebihara⁷; Allan Weatherwax⁸
- 10:15-10:30 **Electron Reflection Off the Earth's Bow Shock: Role of the Strahl**
 C. Gurgiolo, M. L. Goldstein
- 10:30-11:00 **COFFEE BREAK**
Chair: Vassilis Angelopoulos
- 11:00-11:15 **Bow shock current closure: Cluster and MMS observations**
 M. Hamrin (1), H. Gunell(1,2), A. De Spiegeleer(1), and J. Lindkvist(1)
- 11:15-11:35 **Magnetosheath jets: interaction with ambient plasma and impact on the magnetopause (Invited)**
 Ferdinand Plaschke and Heli Hietala
- 11:35-11:50 **Cluster and MMS simultaneous observations of the magnetopause and magnetosheath high speed jets**
 C. P. Escoubet¹, H. Hwang², S. Toledo-Redondo³, N. Aunai⁴, J. Dargent⁴, J. P. Eastwood⁵, R. Fear⁶, H. Fu⁷, K. Genestreti⁸, D. Graham⁹, Y. Khotyaintsev⁹, G. Lapenta¹⁰, B. Lavraud¹¹, C. Norgren¹², D. Sibeck¹³, A. Varsani¹⁴, J. Berchem¹⁵, G. Paschmann¹⁶, S. E. Haaland^{12,17}, M. Dunlop^{7,18}, O. Roberts¹, H. Laakso¹⁹, A. Masson¹⁹, C. Carr⁵, I. Dandouras¹¹, A. Fazakerley¹⁴, R. Nakamura⁸, J. Burch², B. L. Giles¹³, C. Pollock²⁰, C.T. Russell¹⁵, R. B. Torbert²¹
- 11:50-12:05 **Magnetosheath jet properties and evolution as determined by a global hybrid-Vlasov simulation**
 Minna Palmroth (1,2), Heli Hietala (3), Ferdinand Plaschke (4,5), Martin Archer (6,7), Tomas Karlsson (8), XÃ chitl Blanco-Cano (9), David Sibeck (10), PrimoÅ KajdicË†(9), Urs Ganse (1), Yann Pfau-Kempf (1), Markus Battarbee (1), and Lucile Turc (1)
- 12:05-12:20 **The flank magnetopause: THEMIS and Cluster observations**
 S. Haaland (1,2), A. Runov(3), A. Artemyev(3), V. Angelopoulos(3)
- 12:20-12:35 **Magnetopause boundary layers under a strong southward IMF**
 Zdenek Nemecek (1), Jiri Simunek (2), Jana Safrankova (1)
- 12:35-14:00 **LUNCH BREAK**
Chair: Mats Andre
- 14:00-14:20 **Dawn-dusk asymmetries in the magnetosphere (Invited)**
 C. Forsyth

- 14:20-14:40 **Concomitant double ion and electron populations in the Earth's magnetopause boundary layers from interchange magnetic reconnection (Invited)**
Benoit Lavraud, 1 Christian Jacquey,1 Timothe Achilli,1 Stephen A. Fuselier,2,3 Elena Grigorenko,4 Tai D. Phan,5 Marit Oieroset,5 James McFadden,5 and Vassilis Angelopoulos6
- 14:40-15:00 **Non-Lobe reconnection at the Earth's magnetopause for northward IMF (Invited)**
S. A. Fuselier 1,2, K. J. Trattner 3, S. M. Petrinec 4, B. Lavraud 5, J. Mukherjee 1
- 15:00:15:20 **Spreading speed of magnetopause reconnection X-lines using ground-satellite coordination (Invited)**
Ying Zou 12, Brian M. Walsh3, Yukitoshi Nishimura45, Vassilis Angelopoulos6, J. Michael Ruohoniemi7, Kathryn A. McWilliams8, Nozomu Nishitani9
- 15:20-15:40 **Cluster observations of the cusp simultaneously at different MLT sectors (Invited)**
Y.V. Bogdanova (1), A.N. Fazakerley (2), C.P. Escoubet (3), R.C. Fear (4), J. Berchem (5), K.J. Trattner (6), F. Pitout (7), M. Andre (8), P. Canu (9), C. Carr (10), I. Dandouras (7), Y. Khotyaintsev (8), L. Kistler (11), C. Mouikis (11), J. L. Rauch (12)
- 15:40-16:10 **COFFEE BREAK**

Chair: Patrick Daly
- 16:10-16:25 **Estimating the Kinetic Energy Budget of the Polar Wind Outflow**
Kun Li 1, Yong Wei 1, 9, Stein Haaland 2,3, Elena Kronberg 2,4, Zhaojin Rong 1, 9, Lukas Maes 2, Romain Maggiolo 5, Mats Andre 6, Hans Nilsson 7, Elena Grigorenko 8
- 16:25-16:40 **Why an intrinsic magnetic field does not protect a planet against atmospheric escape**
Herbert Gunell (1,2), Romain Maggiolo (1), Hans Nilsson (3), Gabriella Stenberg Wieser (3), Rikard Slapak (4), Jesper Lindkvist (2), Maria Hamrin (2), and Johan De Keyser (1)
- 16:40-17:00 **The energetic particle properties in the magnetosphere: results based on statistics from Cluster/RAPID observations (Invited)**
E. A. Kronberg (1,2), H. Luo (3), K. Nykyri (4), K. J. Trattner (5), P. W. Daly(1), E. Grigorenko (6)
- 17:00-17:15 **The IMF and solar wind influences on the FACs in the Magnetotail**
Jiankui Shi, Zhengwei Cheng

Session: Large Scale Dynamics within the magnetosphere
- 17:15-17:35 **How much flux does a flux transfer event transfer? (Invited)**
R. C. Fear (1), L. Trenchi(1,2), J. C. Coxon(1) and S. E. Milan(3)

**Tuesday
25 September 2018**

Session: Large Scale Dynamics within the magnetosphere

Chair: Jimmy Raeder

- 09:00-09:20 **Relationship Between Flow-Braking Oscillations and Pi2 Pulsations (Invited)**
Kazue Takahashi (1), Michael D. Hartinger (2), , Massimo Vellante (3,4), Balazs Heilig (5), Robert Lysak (6), , Dong-Hun Lee (7), and Charles W. Smith (8)
- 09:20-09:35 **Oscillatory flows in Earth's magnetotail**
A. De Spiegeleer (1), M. Hamrin(1), T. PitkÄ nen(1,2), M. Volwerk(3), H. Nilsson(4), L. Andersson(5), H. Gunell(1,6), T. Karlsson(3,7), C.G. Mouikis(8), L.M. Kistler(8)
- 09:35-09:55 **Ion velocity distributions in dipolarization events (Invited)**
J. Birn, A. Runov, M. Chandler, T. Moore, X.-Z. Zhou
- 09:55-10:10 **Statistical properties of sub-ion magnetic holes in the dipolarized magnetotail: formation, structure, and dynamics**
Pavel Shustov (1), Anton Artemyev (2), Xiaojia Zhang (2), Egor Yushkov (1), and Anatoliy Petrukovich (1)
- 10:10-10:30 **A Tale of Two Injections: The relationship between small- and large-scale particle injections and their propagation during magnetospheric substorms (Invited)**
Christine Gabrielse (1), Emma Spanswick(2), Anton Artemyev(1), Toshi Nishimura(1,3), Andrei Runov(1), Larry Lyons(1), Vassilis Angelopoulos(1), Drew L. Turner(4), Geoff Reeves(5), Robert McPherron(1), Eric Donovan(2)
- 10:30-11:00 **COFFEE BREAK**
- Chair:** Andrew Fazakerley
- 11:00-11:15 **OpenGGCM modeling results addressing the relation between BBFs, DFs, and auroral signatures**
J. Raeder (1), B. Ferdousi(2), D. Cramer(1), K.Murphy(3), E. Zesta(3)
- 11:15-11:30 **Effects of geomagnetic storms in the radiation belts and in the plasmasphere**
Pierrard Viviane and Botek Edith
- 11:30-11:45 **Large Impulsive Magnetic Events and Power Grid Harmonic Distortion Spikes**

Martin Connors (1), Sebastien Guillon (2) Mark J. Engebretson (3), Xiangning Chu (4) ,Kyle Reiter (5), Robert L. McPherron (6), David Boteler (7), Christopher T. Russell (6), Brian Jackel (5), Ian Schofield (1)

- 11:45-12:05 **Energetic Particle Injections Deep into the Inner Magnetosphere: Electric Fields and Multipoint Measurements (Invited)**
Sam Califf, Hong Zhao, Paul Loto'aniu, and Rob Redmon
- 12:05-12:25 **Current systems in the Earth's magnetosphere (Invited)**
Natalia Ganushkina
- 12:25-14:00 **LUNCH**
- 14:00-17:30 **Posters**

**Wednesday
26 September 2018**

Session: Large Scale Dynamics within the magnetosphere

Chair: Iannis Dandouras

- 09:00-09:15 **Inversion of high temporal and spatial resolution ENA aurorae to derive and monitor ring current variations during a substorm event**
L Lu1, , S McKenna-Lawlor2, J. Balaz2,3
- 09:15-09:35 **Storm time dynamics of ring current protons: Implications for the long-term energy budget in the inner magnetosphere (Invited)**
Gkioulidou Matina, A. Y. Ukhorskiy, D. G. Mitchell, and L. J. Lanzerotti
- 09:35-09:55 **Ion outflow observed by Cluster: an overview (Invited)**
Audrey Schillings
- 09:55-10:15 **Atmospheric escape from the terrestrial magnetosphere and its dependence on geomagnetic activity (Invited)**
Rikard Slapak (1), Audrey Schillings (2), Hans Nilsson (2), Masatoshi Yamauchi (2), Iannis Dandouras (3)
- 10:15-10:35 **Three-Dimensional Collisionless Asymmetric Magnetic Reconnection in MHD-EPIC Simulations (Invited)**
Stefano Markidis, Ivy Bo Peng, Yuxi Chen, Gabor Toth, Tamas Gombosi, Andris Vaivads, Yuri Khotyaintsev
- 10:35-11:05 **COFFEE BREAK**
- Chair:** Harri Laakso
- 11:05-11:20 **Data exploitation and visualisation at CDDP: new developments for space-ground coordination**

F. Pitout (1), V. Genot(1), A. Marchaudon(1), P.-L. Blelly(1), L. Beigbeder(2), N. Dufourg(3), M. Gangloff (1), M. Bouchemit(1), D. Popescu(2), S. Caussarieu(2), J.-P. Toniutti(2), J. Durand(3)

Session: Small-Scale processes in space plasma

- 11:20-11:35 **Fine structure of plasma turbulence observed by EFW within the terrestrial bow shock**
Simon Walker (1), Keith Yearby(1), Yasuhide Hobara(2), Michael Balikhin(1)
- 11:35-11:55 **Electron dynamics in kinetic-scale structures resolved with MMS (Invited)**
Daniel J. Gershman
- 11:55-12:15 **The importance of waves for reconnection at the magnetopause (Invited)**
D. B. Graham (1), Yu. V. Khotyaintsev (1), A. Vaivads (1), M. Andre (1), C. Norgren (2), +MMS team
- 12:15-12:30 **Electric current structure and plasma kinetic features at the magnetopause**
XiangCheng Dong (1,2), Malcolm Dunlop (1,2), TieYang Wang (1,2), Jinbin Cao (1), Philippe Escoubet (3)
- 12:30-14:00 **LUNCH BREAK**

Chair: Yasuhito Narita
- 14:00-14:15 **Cold ions in the magnetosphere: Where they are and why they are important**
Mats Andre (1) and Sergio Toledo-Redondo (2)
- 14:15-14:35 **An analysis of magnetic reconnection events and their associated auroral enhancements (Invited)**
Nathan A. Case (1), A. Grocott(1), S. E. Milan(2), T. Nagai(3), J. P. Reistad(4)
- 14:35-14:55 **The role of O⁺ on local and global changes during reconnection in the magnetotail (Invited)**
C.G. Mouikis (1), A. Ardakani(1), L. M. Kistler(1), V. Roytershteyn, Y. Omelchenko, R. Torbert(1)
- 14:55-15:10 **Intense current structures observed at electron scales during dipolarization in the near-Earth magnetotail. Cluster observations**
E. E. Grigorenko 1,2, S. Dubyagin3, A. Yu. Malykhin1, Yu. V. Khotyaintsev4, E. A. Kronberg5,6, B. Lavraud7, N. Yu. Ganushkina3
- 15:10-15:30 **Electron acceleration and thermalisation at magnetotail separatrices (Invited)**
Cecilia Norgren (1), Daniel Graham (2), Konrad Steinvall (2), Michael Hesse (1), Yuri Khotyaintsev (2), Mats Andr   (2), Yin Xu (3)

- 15:30-16:00 **COFFEE BREAK**
- Chair:** Arnaud Masson
- 16:00-16:15 **Singular Value Decomposition of the Spectral Matrix**
Ulrich Taubenschuss (1), Ondrej Santolik (1,2)
- Session: Turbulence and plasma heating*
- 16:15-16:35 **Dynamical Complexity and Intermittent Turbulence in Space Plasmas (Invited)**
Giuseppe Consolini
- 16:35-16:55 **Ion kinetic instabilities in the turbulent solar wind (Invited)**
Petr Hellinger
- 16:55-17:10 **Non-universality of the turbulent spectra at sub-ion scales in the solar wind: dispersive effects vs the Doppler shift**
Fouad Sahraoui 1 and Shiyong Huang²
- 17:10-17:25 **Solar wind turbulence up to electron kinetic scales: THEMIS/ARTHEMIS observations**
C. Salem (1), J. Bonnell(1), E. Hanson(1), C. Chaston(1), K. Klein(2), C. Lacombe(3), L. Matteini(3), D. Verscharen(4), L. Franci(5), S. Landi(6)

**Thursday
27 September 2018**

Session: Turbulence and plasma heating

Chair: Misha Balikhin

- 09:00-09:20 **The magnetic field power spectrum at electron scales in the solar wind (Invited)**
Owen Wyn Roberts 1,6 , O. Alexandrova 2 , , P. Kajdic 3 , L. Turc 4 , D. Perrone 5 , C. P. Escoubet , MGG Taylor 1, A. Walsh 7
- 09:20-09:35 **Relation of parallel and perpendicular components of velocity fluctuations**
Jana Safrankova (1), Zdenek Nemecek (1), Frantisek Nemecek (1), Daniel Verscharen (2,3), Christopher H. K. Chen (4)
- 09:35-09:55 **Hybrid simulations of the interplay between plasma turbulence and magnetic reconnection and comparison with in-situ observations (Invited)**
Luca Franci 1, Julia E. Stawarz², Christopher H. K. Chen¹, David Burgess¹, Simone Landi³, Petr Hellinger⁴, Lorenzo Matteini⁵, Alexander Pitna⁶, Jana Safarnkova⁶, Zdenek Nemecek⁶, Emanuele Papini³, Andrea Verdini³

- 09:55-10:15 **Compressible MHD turbulence in the Earth's magnetosheath: estimation of the energy cascade rate using in-situ spacecraft data (Invited)**
L. Z. Hadid (1), F. Sahraoui (2) , S. Galtier (2) and S. Y. Huang (3)
- 10:15-10:35 **The physical nature of the dawn-dusk asymmetry of magnetosheath ion temperature and its global implications: results from THEMIS and MMS (Invited)**
A. P. Dimmock (1), Adnane Osmane(2,3), E. Yordanova(1), Katariina Nykyri(4), Tuija Pulkkinen(3)
- 10:35-11:05 **COFFEE BREAK**

Chair: Ondrej Santolik
- 11:05-11:25 **Current sheets and reconnection associated waves in the turbulent magnetosheath (Invited)**
Z. Voros (1,2), E. Yordanova(3), Y. Narita(1), M. M. Echim(4), G. Consolini(5) and D. Graham(3)
- 11:25-11:40 **Simultaneous detection of terrestrial ionospheric heavy ions in the Earth's inner magnetosphere and at the Moon**
Iannis Dandouras, Andrew R. Poppe, Matt O. Fillingim, Lynn M. Kistler, Christopher G. Mouikis, Henri Reme, and Patrick Pinet
- 11:40-12:00 **Ion Populations and Shock Rippling at Interplanetary Shocks (Invited)**
Primož Kajdic (1), Xochitl Blanco-Cano (1), Heli Hietala (2), David Burgess (3), Luis Preisser (1)
- 12:00-12:15 **Scattering of diffuse ions in front of the terrestrial quasi-parallel bow shock under different foreshock conditions**
Arpad Kis (1), Shuichi Matsukiyo(2), Fumiko Otsuka(2), Tohru Hada(2), Istvan Lempurger(1) and Iannis Dandouras(3)
- 12:15-12:30 **Plasmasphere observations with Cluster completed by new data from an old mission, Dynamic Explorer-1**
F. Darrouzet (1), J. De Keyser (1), J. F. Lemaire (1), P. M. E. Decreau (2), D. Gallagher (3)
- 12:30-14:00 **LUNCH BREAK**

Chair: Melvyn Goldstein
- 14:00-14:15 **Case studies of chorus in plasmaspheric plumes**
O. Santolik (1,2), I. Kolmasova (1,2), F. Darrouzet (3), J. S. Pickett (4), N. Cornilleau-Wehrin (5,6)
- 14:15-14:30 **Automatic detection of EMIC rising tones**
B. Grison (1), O. Santolik (1,2), N. Cornilleau-Wehrin (3) and C. Carr (4)

- 14:30-14:50 **Ion hole formation and nonlinear generation of Electromagnetic Ion Cyclotron waves: THEMIS observations (Invited)**
Yoshizumi Miyoshi, Yuto Katoh, Kunihiro Keika, Vassilis Angelopoulos, Satoshi Kasahara, Kazushi Asamura, Satoko Nakamura, Yoshiharu Omura
- 14:50-15:05 **Equatorial Noise: Generation and Spectral Features**
D. R. Shklyar (1,2), M. A. Balikhin(3)
- 15:05-15:20 **Detailed Properties of Equatorial Noise with Quasiperiodic Modulation**
N. Cornilleau-Wehrin 1,2 F. Němec3, O. Santolik4,3, M. Hayosh4, F. Darrouzet5
- 15:20-15:35 **Unusual lightning whistler event observed by the Cluster spacecraft within an interval of quasiperiodic emissions**
Ivana Kolmasova (1,2), Ondrej Santolik (1,2), Miroslav Hanzelka (1,2), Frantisek Nemec (2), Jolene Pickett (3)
- 15:35-16:05 **COFFEE BREAK**

Chair: Nicole Cornilleau-Wehrin
- 16:05-16:20 **Improving radiation belt simulations with better parametrized wave models**
H. Aryan (1,2), D. Sibeck(1), M. Balikhin(2), O. Agapitov(3), S.B. Kang(1), M.C. Fok(1)
- 16:20-16:40 **Quasiperiodic Modulations of Energetic Electron Fluxes in the ULF Range Observed by the ERG Satellite (Invited)**
Mariko TERAMOTO [1], Tomoaki HORI[1], Shinji SAITO[1], Satoshi KURITA[1], Nana HIGASHIO[2], Takefumi MITANI[2], Ayako MATSUOKA[2], Inchun PARK[1], Takeshi TAKASHIMA[2], Reiko NOMURA[2], Masahito NOSE[3], Akiko FUJIMOTO[4], Yoshimasa TANAKA[5], Manabu SHINOHARA[6], Iku SHINOHARA[2]
- 16:40-16:55 **Drift compressional mode interacting with energetic particles in the inner magnetosphere: THEMIS case study**
A. V. Rubtsov (1,2), O. V. Agapitov (3), P. N. Mager (1), D. Yu. Klimushkin (1), O. V. Mager (1)
- 16:55-17:10 **Modelling and Observations of Electron Flux Oscillations in Response to Broadband ULF Waves**
Theodore E. Sarris [1][2], Xinlin Li [2], Michael Temerin [3], Hong Zhao[2], Sam Califf [2], Wenlong Liu [4] and Robert Ergun [2]

**Friday
28 September 2018**

09:00-15:30 **Cluster SWT**

POSTERS

- 01 **Thin current sheets observed in the solar wind.**
Vinogradov A.A. 1,2, Vasko I.Y.4, Artemyev A.V.3, Yushkov E.V.1,2, Petrukovich A.A.2
- 02 **Possible reconnection at the terrestrial bow shock: MMS, Cluster, and THEMIS observations**
M. Hamrin (1), H. Gunell(1,2), A. De Spiegeleer(1), T. Pitkanen(1,3), T. Karlsson(4), and J. Vaverka(5)
- 03 **Pattern of small-scale structures in the turbulent magnetosheath: MMS observations**
Tieyan Wang (1), Jiansen He (2), Malcolm Dunlop (1,3)
- 04 **Analytic modeling of magnetic field in the magnetosheath and around the magnetopause**
M. Vandas (1) and E. Romashets (2)
- 05 **Cluster/STAFF-SA instrument observations of lion roar emissions inside the terrestrial magnetosheath in years 2001-2015**
D. Pisa (1), V. Krupar (2,3,1), O. Kruparova (1), O. Santolik (1,4), J. Soucek (1), A.Kolinska (1)
- 06 **Ion-scale kinetic Alfvén turbulence: MMS measurements of the Alfvén ratio in the magnetosheath**
O.W. Roberts 1,5, S. Toledo-Redondo 2, , D. Perrone 3, , J. Zhao 4,, Y. Narita 5,, D. Gershman 6, R. Nakamura 5, B. Lavraud 7, C.P. Escoubet 1, B. Giles 5, J. Dorelli 5, C. Pollock 5, J.Burch 8
- 07 **Fine structure of the night-side equatorial magnetopause: ARTEMIS observations**
Lukin A.S. (1,2), Artemyev A.V. (3,1), Petrukovich A.A. (1), Yushkov E.V. (1,4)
- 08 **On the origin of oscillatory flows in Earth's magnetotail**
A. De Spiegeleer (1), M. Hamrin(1), M. Volwerk(2), H. Gunell(1,3), T. Karlsson(2,4), L. Andersson(5), T. PitkÅ nen(1,6)
- 09 **Response of Earth's neutral sheet to reversals in the IMF By Component**
Nathan A. Case (1), A. Grocott(1), S. Haaland(2;3), C. J. Martin(1), T. Nagai(4)
- 10 **Convection electric field and plasma convection in a twisting magnetotail**
Timo Pitkanen (1,2), Anita Kullen (3), Quanqi Shi (1), Maria Hamrin (2), Alexandre De Spiegeleer (2), and Yukitoshi Nishimura (4)
- 11 **Magnetospheric Processes Relevant to the Substorm Events: Observations from Multiple Missions**

- Olga Gutynska (1), D. Sibeck(2), M.-C. Fok(2), J. Safrankova(1), Z. Nemecek(1)
- 12 **Tail reconnection in the global magnetospheric context: Vlasiator first results**
Minna Palmroth (1,2), Sanni Hoilijoki (3), Liisa Juusola (2), Tuija I. Pulkkinen (4), Heli Hietala (5), Yann Pfau-Kempf (1), Urs Ganse (1), Sebastian von Alfthan (6), Rami Vainio (5), and Michael Hesse (7)
- 13 **Near-Earth Vortices' Driving of Field-Aligned Currents: Magnetospheric Multiscale and Swarm Observations**
C. Zhang 1,2, C. Shen3, Y. Y. Yang4, M. W. Dunlop5,6, S. Ti1,2, C. T. Russell7, H. Luehr8, J. L. Burch9, P. -A. Lindqvist10, R. B. Torbert11, Friis-Christensen12
- 14 **MULTIPOINT SPACECRAFT OBSERVATIONS OF Pc 4-5 PULSATIONS IN THE DAYSIDE MAGNETOSPHERE: THE PARTICLES SIGNATURES**
G. Korotova, D. Sibeck, R. Redmon, V. Angelopoulos
- 15 **The influence of solar wind and geomagnetic indices on Lower Band Chorus emissions**
Richard Boynton, Michael Balikhin, Simon Walker
- 16 **O+ escape at Earth during the magnetic storm on September 4th - 10th, 2017**
A. Schillings 1,2; H. Nilsson1, R. Slapak3, P. Wintoft4, M. Yamauchi1, M. Wik4, I. Dandouras5, M.C. Carr6
- 17 **Ionospheric ion response to the space weather event during 6-8 September 2017**
M. Yamauchi [1], A. Schillings[1,2], C.-F. Enell[3], R. Slapak[3], H. Nilsson[1], T. Sergienko [1], P. Wintoft[1], M. Wik[1], M.G. Johnsen[4], I. Dandouras[5]
- 18 **Update on the long-term calibration of RAPID/IES 3D electron data**
Esa Vilenius, Patrick Daly, Elena Kronberg
- 19 **RAPID detection of heavy ions in the magnetosphere**
Stein Haaland (1,2), Esa Vilenius(1), Patrick Daly(1)
- 20 **Optimal Gradients of Fields from Multi-Spacecraft Measurements**
Gerard M. Chanteur
- 21 **A note on Capon's minimum variance projection for multi-spacecraft data analysis**
Y. Narita (1)
- 22 **Electron Drift Instrument measurements: statistical overview**
Mikhail Rashev
- 23 **Global trends of electron populations over the period of the Cluster mission**
M.G.G.T. Taylor (1), C.P. Escoubet (1), A.P. Walsh (2), E. Kronberg (3) and M. H. Denton (4)