



The Newsletter - Volume 6, Issue 4

25th March 2009

Covers events between 1st December 2008 and 28th February 2009

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General

On 3 December 2008, John Graham Rose, Head of the Mechanical Workshop, passed away at his home. John joined MSSL in 1981 and he was one of the characters of MSSL, respected and loved. He worked on numerous projects including SPIRE, the ESA ADR Program and the Plasma Detector program. He is survived by his wife Christine and his daughters Julliet and Katie. His funeral was held on 17 December and was well attended by his friends from MSSL. John's family asked for donations to charity instead of flowers and we, at MSSL, raised £145, to be split between MIND and the Salvation Army.

JR will be deeply missed.

Visitors

Pierrette Decreau (CNRS, Orleans) visited the Space Plasma group on 10-11 December to work with Sandrine Grimald. During her visit, she gave a seminar entitled "High frequency waves and electrons in the dayside magnetosphere: signatures of short and large scale properties, revisited with CLUSTER observations".

Prizes and Awards

Congratulations to Chris Arridge on the award of an STFC postdoctoral fellowship at MSSL, to be taken up on 1 October 2009

Last summer Chris Arridge supervised Tim Culwick, an A-level student from Churchers College, on a Nuffield Schools and College Bursary. Tim was selected to present his work with Chris at the Young Scientists' and Engineers' Fair (YSEF) held on 9 March at the QEII Exhibition Centre in Westminster and was presented with a CREST Gold award for this work.

Appointments (e.g. Editorial Boards or Committees)

Roberto Soria was appointed to the SOC for the "10 years with Chandra" X-ray conference in Boston, Sept 2009. If anyone from MSSSL is interested in participating, please drop him a line.

Sarah Matthews has been appointed to STFC's Near Universe Advisory Panel (NUAP).

Proposals

Solar and Stellar Spectroscopic and Analysis Environment, NASA NNN08ZDA001N-SHP, Collaborator Allende Prieto, PI J.P. Morgenthaler.

Telescope/Satellite Time Awards

Nick Seymour has been awarded time to get mid-IR spectra of distant radio galaxies during the last throws of the Spitzer warm mission, before it's cryogen runs out.

Mission Status and Developments

Cassini – The instrument is still performing well and Cassini is now in its extended ('Equinox') mission at Saturn until July 2010, with the hope of a further 'Solstice' mission until 2017. Many publications and presentations in this period.

Cluster – The Cluster spacecraft continue to operate well. During the newsletter period, special operations included observations targeted on studying solar wind turbulence. PEACE measurements of the inner magnetosphere at lower than usual altitudes ($6 > L > 4$) are also ongoing, as the radiation environment there is unusually benign at present, allowing measurements of the plasmopause and plasmasphere.

The ESA Science Programme Committee extended Cluster to the end of 2009 at their February meeting, and will consider extending to end 2010 at their next meeting in June.

The first examples of the new PITCH_SPIN data product were provided to the Cluster Active Archive (CAA) for test purposes. A new release of Moments data was provided to CAA.

Work on the new v5.2 PEACE calibration is approaching fruition.

Cosmic Visions – Outer planets mission – Andrew Coates (AJC), Geraint Jones (GHJ) and Graziella Branduardi-Raymont (GBR) presented at RAS outer planets meeting on 13 Feb. A few days after this meeting the EJSM (Europa Jupiter System Mission) mission (ESA Ganymede orbiter and NASA Europa orbiter) was selected for implementation in the earliest L class opportunity timeframe (2020 launch) though a future mission to Titan was equally highly rated scientifically. AJC attended EJSM Joint Science Definition Team meeting in Paris. Preparations underway for STFC grant bid and ESA declaration of interest for a plasma instrument for Ganymede/Europa.

Cross-Scale – Members of the laboratory continue to be engaged with a number of activities on Cross-Scale as part of the assessment phase for Cosmic Visions. Chris Owen attended a meeting of the ESA Science Study Team at ESTEC, which concentrated on preparations for a community workshop and on an exchange of information with leads of the proto-consortia for the instrumentation. As lead of a consortium of institutes studying the electron instrumentation required for the mission, Andrew Fazakerley also attended this meeting. We received news from STFC of the outcome of our funding application for these studies, which will amount to some £95k (@ 80% FEC).

Double Star – The TC-2 spacecraft is not in the proper orientation due to failure of attitude control computers early in the missions. It is still functioning, but controllers are currently unable to achieve proper routine operations with it, even in periods when the solar cells receive good illumination. Payload command preparation work proceeded normally, but on the spacecraft, the commands were not executed, or else the spacecraft did not return the data.

ExoMars - PanCam documentation provided for payload confirmation review 2 by Andrew Griffiths (ADG) and team. In addition, responses to preliminary design review items for PanCam progressing. AJC, ADG and Peter Muller (JPM) attended ExoMars oversight committee meeting in February. PanCam (AJC) and WALi (JPM) presentations.

Solar Orbiter - The ESA Solar Orbiter program has been moved back into the Cosmic Visions competition as an 'M' Class candidate. Nevertheless, it appears that ESA will announce the selection of the payload on March 17, and we have an interest in the form of our proposed PI-role in the SWA consortium. We continue to work with SWA partners as part of the definition phase of the mission. STFC has announced the level of funding for Solar Orbiter Cosmic Vision definition phase activities, and the MSSSL SWA award for this phase will be £60k.

SPiRE - Herschel, whose instrument SPiRE was designed and built at MSSL, is scheduled for launch on 29 April 2009. Watch this space for news... There will be a Sky at Night Special on Herschel on Monday 6 April.

Venus Express – Instrument performing well. Calibration report for ELS updated. Extended mission runs until December 2010.

Publications - Refereed

A. Published

Allende Prieto, C., Majewski, S.R., Schiavon, R., Cunha, K., Frinchaboy, P., Holtzman, J., Johnston, K., Shetrone, M., Skrutskie, M., Smith, V & Wilson, J., APOGEE: The Apache Point Observatory Galactic Evolution Experiment, *Astronomische Nachrichten*, 329,1018, 2008.

Andre, N., Blanc, M., Maurice, S., Schippers, P., Pallier, E., Gombosi, T.I., Hansen, K.C., Young, D.T., Crary, F.J., Bolton, S., Sittler, E.C., Smith, H.T., Johnson, R.E., Baragiola, R.A., COATES, A.J., Rymer, A.M., Dougherty, M.K., Achilleos, N., ARRIDGE, C.S., Krimigis, S.M., Mitchell, D.G., Krupp, N., Hamilton, D.C., Dandouras, I., Gurnett, D.A., Kurth, W.S., Louarn, P., Srama, R., Kempf, S., Waite, H.J., Esposito, L.W. & Clarke, J.T., Identification of Saturn's magnetospheric regions and associated plasma processes: Synopsis of Cassini observations during orbit insertion, *Reviews of Geophysics*, 46, 4008, 2008.
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- B. In Press**
- Bertucci, C., B. Sinclair, N. Achilleos, P. Hunt, M.K. Dougherty and C.S. Arridge, The Variability of Titan's Magnetic Environment, *Planet. Space Sci.*, in press.
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- SORIA, R., & Ghosh, K. "Different types of ultraluminous X-ray sources in NGC 4631", 2009, *ApJ*. in press) <http://arxiv.org/abs/0901.4302>. We studied a sample of ultraluminous sources in different spectral states, including perhaps a nuclear-burning massive white dwarf.
- SORIA, R., Risaliti, G., Elvis, M., Fabbiano, G., Bianchi, S., & Kuncic, Z. "The XMM-Newton long look of NGC 1365: lack of a high/soft state in its ultraluminous X-ray sources", 2009, *ApJ*, in press, <http://arxiv.org/abs/0901.3750>. We studied the variability and spectral states of two ultraluminous black holes in NGC 1365, and noted some differences compared with the standard spectral states of stellar-mass black holes.
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- Zhao, M., Wang, J., MATTHEWS, S., Ding, M., Zhao, H. & Jin, C., Flare-induced signals in polarization measurements during the X2.6 flare on January 15, 2005, *Research in Astronomy & Astrophysics*, 2009. Refereed in press.
- Publications - Non-refereed**
- A. Published**
- ALLENDE PRIETO, C. 2008, *Stellar Atmospheric Parameters: The Four-Step Program and Gaia's Radial Velocity Spectrometer, Classification and Discovery in Large Astronomical Surveys*, AIP Conf. Proceedings, 1082, 47 <http://adsabs.harvard.edu/abs/2008arXiv0810.4100A>
- ALLENDE PRIETO C., 2008, *Physica Scripta*, 133, 014014, <http://adsabs.harvard.edu/abs/2008PhST..133a4014A>

Beers T. C., Lee Y. S., Peruta C., Sivarani T., ALLENDE PRIETO C., Aoki W., Carollo D., SDSS, 2009, The Lowest Metallicity Stars from SDSS/SEGUE, AAS, 213, #416.12

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Grisé, F., Pakull, M. W., SORIA, R., & Motch, C., "The ULX NGC 1313 X-2: an optical study revealing an interesting behavior", Proceedings of the Symposium "Simbol-X - Focusing on the Hard X-ray Universe", AIP Conf. Proc. Series, P. Ferrando and J. Rodriguez eds
<http://arxiv.org/abs/0902.4431>. We studied the mass and age of the donor star that is transferring mass onto the ultraluminous black hole NGC 1313 X-2.

Ramirez I., ALLENDE PRIETO C., Asplund M., Koesterke L., Lambert D.~L., 2009, Spectroscopic Properties of Granulation in K-type Dwarf Stars, AAS, 213, #406.01

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<http://adsabs.harvard.edu/abs/2009AA...21340811S>

Invited Talks and Conferences

RAS meeting on UK participation in Aurora, Dec. 2008

- Coates, A.J., Griffiths, A.D., Jaumann, R., Schmitz, N., Michaelis, H., Paar, G., Barnes, D., Josset, J.L. and the PanCam team, The Panoramic Camera (PanCam) instrument for the ESA ExoMars rover (presented by AJC).

American Geophysical Union Fall Meeting, San Francisco, Dec. 2008. Attended by G. Jones (invited talk), C.S. Arridge, S.M. Tsang and S.J. Kanani, A. Walsh – C.S. Arridge, S. Grimald, S.J. Kanani, S. Tsang, A. Walsh and A. Wellbrock led posters, the planetary group contributed to 15 presentations)

- Jones, G H, Coates, A J, Kanani, S, Arridge, C S, Young, D, Crary, F, Jia, Y, Russell, C T, Kempf, S, Cassini CAPS-ELS observations of Enceladus's plume.

International Space Science Institute meetings Bern, Jan. 2009

- Chris Owen participated in the first meeting of an ISSI team. This team consists of observers, modelers and theorists to plan

and execute activities aimed at improving understanding of reconnection and magnetic flux transfer events on the dayside terrestrial magnetopause. A second meeting will take place in September.

- Andrew Fazakerley, Colin Forsyth and Andrew Walsh attended the final meeting of an ISSI team. This team was organised by Andrew Fazakerley and Malcolm Dunlop (RAL) and consisted of an international group of scientists looking at large scale phenomena in the magnetotail. To date, the team has produced four publications.

RAS Specialist Discussion Meeting on Outer planet magnetospheres: Influences, Interactions, and Dynamics, Jan. 2009. Co-convended by G.H. Jones; talks by S. Kanani, C.S. Arridge, A.J. Coates, posters by C.S. Arridge, S. Grimald and A. Wellbrock.

- Arridge, C.S., McAndrews, H. J., Jackman, C. M., Forsyth, C., Sittler, E. C., Gilbert, L. K., Khurana, K. K., Lewis, G. R., Russell, C. T., Coates, A. J., Dougherty, M. K., Wellbrock, A. and Collinson, G. A. Plasma electrons in Saturn's magnetotail: structure, distribution and energisation.
- Coates, A.J., Lewis, G.R., Wellbrock, A., Jones, G.H., Young, D.T., Crary, F.J., Waite Jr., J.H., Johnson, R.E., Cassidy, T.A. and Hill, T.W. Negative ions at Titan and Enceladus.
- Kanani, S. et al., A new form of Saturn's magnetopause, using a dynamic pressure balance model.

UCL/Birkbeck APEX meetings

- Coates, A.J., Negative ions at Titan and Enceladus, presented at Astrobiology and Planetary Exploration (APEX) meeting, Centre for Planetary Sciences. Jan. 2009.

RAS Specialist Discussion Meeting on Future Exploration of the Jupiter and Saturn Systems, Feb. 2009. Talks by Graziella Branduardi-Raymont, Andrew Coates and Geraint Jones.

- Coates, A.J., Jones, G.H., Griffiths, A.D., Jaumann, R., Schmitz, N. and the TSSM JSDT, Imaging Systems for the Titan Balloon and Lander.
- Coates, A.J., with thanks to TSSM and EJSM JSDT, G.H. Jones, D.O. Kataria, Plasma Measurements at the Outer Planets: Science Objectives and Instrumentation Requirements.
- Branduardi-Raymont, G. and Jones, G. H. XITE: An X-ray View of the Outer Planets.
- Jones, G.H., et al., MOCCA: Measurement of the Charge and Composition of Aerosols at Titan and Enceladus.

Media Broadcasts and Features

Andrew Coates

- Info for Chemistry World on [carbonates on Mars](#), 18 Dec. 2008.
- Interview on More 4 News, 15 Jan. 2009, on methane on Mars.
- Info for BBC News Online on methane on Mars, appeared 15 Jan. 2009.
- Interview on BBC Radio Berkshire (Henry Kelly) on moon-Venus conjunction.

Colin Forsyth was interviewed by a BBC researcher working on an upcoming series entitled "The Seven Wonders of the Solar System".

Outreach

Chris Brockley-Blatt and Craig Theobald went to Holy Trinity Primary School in Cuckfield, Sussex, on 24 February, for an afternoon of space activities. Chris gave a presentation and demonstrations on the solar system to the three classes of 6 to 7 years. 90 children attended. Craig finished the afternoon with a demonstration of Water rockets, much to the delight of the children.

Alison Wallace won a place as a lecturer for the Taster Lecture programme offered by the Widening Participation Office at UCL. The lectures are for children from disadvantaged schools in the London area, and are designed to raise their aspirations and promote a university education. Her first lecture was given on 27 January and two more are to follow in March and April.

Chris Owen attended a lesson at Moreton Morrell Primary School to talk to a class of 20+ 8-year-olds about the solar system, Feb. 2009.

Andrew Coates gave a talk (1st Annual Warwick Lecture) on 'Exploring the solar system' at Warwick School, Redhill, Dec. 2008, to an audience of ~250 pupils, parents and members of the local community. He also talked on 'Exploring our solar system' at St Catherine's Prep School, Year 6, Jan. 2009.

Other News Items/Activities

The proceedings of the Neutron Star conference, organized by Silvia Zane et al. in April 2006, were published. The front cover shows a fine picture of UCL.

<http://www.springer.com/west/home/astronomy?SGWID=4-123-22-173725743-0&detailsPage>



Next Issue

The next issue of The Newsletter (Volume 7, Issue 1) will be published in June 2009. This will cover activities from 1 March 2009 to 31 May 2009.