Professor Keith Mason, Chief Executive STFC
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Dr. E.E. Woodfield and Miss G. Attrill
(contact details attached below)

Cc: **Rt. Hon. John Denham MP**, Secretary of State for Innovation, Universities and Skills
Ian Pearson MP, Minister of State for Science and Innovation
Phil Willis MP, Chairman, Commons Select Committee for Innovation, Universities and Skills
Lord Sutherland of Houndwood, Chairman, Lords Select Committee for Science and Technology
Mr Peter Warry, Chairman, STFC Council
Lord Rees of Ludlow, President, Royal Society
Professor Michael Rowan-Robinson, President, Royal Astronomical Society
Dr Robert Kirby-Harris, Chief Executive, Institute of Physics
Sir Keith O'Nions, Director General of Office of Science and Innovation
Sir Peter Knight, Chairman, STFC Science Board

9th January 2008

Dear Professor Mason

We are writing to you to express our anger and dismay at the onslaught on the facilities and budget of national physics research laid out in the STFC delivery plan published on 11th December 2007. As research physicists in the early stages of our careers, we wish to impress upon you the importance of maintaining full involvement in this internationally celebrated area of UK science.

There are two main causes for concern that demand your immediate attention:
1) the opaque decision making process within STFC resulting in a complete lack of community confidence and trust in the capability of STFC to support astronomy, solar system science, nuclear and particle physics research in the UK
2) the far-reaching and **immediate** impact the announced cuts will have on solar system science.

Lack of community trust in STFC decision making
STFC has now existed for nine months and we observe that the basic fundamental to any successful enterprise, namely effective, clear communication between STFC and its community, remains to be established. The consequence is the current situation of crisis, bewilderment and development of a deep lack of trust in, and respect for, STFC management from the community that STFC is supposed to support. The science budget opening statement of the Department of Innovation, Universities and Skills declares: "*We need a society that is both enthused and excited by science, one where the public understands the value of science, its applications in today's society and can feel confident about how scientists are operating.*" We ask you, how can society have confidence in a system when even the scientists directly involved in do not?

Fundamentally key to solving the current drastic lack of adequate communications is the introduction of a transparent and international peer review. Such a system, which has proven effectiveness over many decades, is currently seriously lacking. It is widely perceived that the current "peer review" process is too easily overruled or ignored by STFC management and is shamefully below the high standards of our international colleagues. This perception exists because the community does not have transparent access to the rationale behind the decisions that have been taken. STFC needs to engage fully with the community so that we may both work effectively to understand where improvements can be made to produce more economically viable, successful science. We want to have confidence in the competence of STFC to make well-informed, sometimes difficult decisions on behalf of our community.

Impact of STFC Delivery Plan on Solar System Science
The new STFC delivery plan is completely void of Solar, Solar-Terrestrial and non-Martian planetary science. You state that you will "*cease all support for ground-based solar-terrestrial physics facilities*", but you fail to mention the rest of solar system science effectively removing it from the remit of STFC.

Recent communications from yourself to the UK Solar Physics community stated that the original PPARC roadmap has not been abandoned despite the new STFC delivery plan. However, as stated on the STFC website with regard to the PPARC roadmap it is said "*The listing of a possible future project in the road map is not an indication that PPARC intends to participate in that project nor is the absence of a project an indication that PPARC has decided not to participate. However, the future projects listed in the Road Map are a guide to those projects which Science Committee regarded as the current likely options.* ***The Roadmap will be updated by STFC's Science Board in due course****.*" With such uncertainty how can we successfully implement STFC strategy? This is another example of STFC's appalling lack of engagement with the scientific community and the reason we lay before you here the importance of retaining all aspects of solar system science.

Of utmost importance is the immediate effect the STFC delivery plan is having. A letter has already been circulated at the Rutherford Appleton Laboratory asking for voluntary redundancies by **1 April 2008** in "*programme areas where funding is*

*ceasing (including work on the International Linear Collider and **Solar Terrestrial Physics**)*" and threatening compulsory redundancies. It would appear that the intention is for STFC to rid itself of Solar Terrestrial Physics as a whole, not just the ground-based aspects, and with immediate effect. Although we welcome the review of Physics announced by Rt. Hon. John Denham MP, the damage will be done **before** Prof. Wakeham has had a chance to report his findings. We demand that implementation of all actions be halted until the proper review has been conducted and its conclusions reported.

The International Review of UK Physics and Astronomy Research 2005 (of which you were a member of the steering committee) stated *"UK researchers have an exceptionally strong standing in solar physics as well as space-based and ground-based space physics. The UK has a world-leading role in helioseismology, dynamo theory, coronal activity, magnetic reconnection, and shock physics, thus covering many of the important aspects of the Sun-Earth connection."* Indeed, on January 10th 2007, you declared *" Solar system research… is a high priority within PPARC, and will be within STFC. It is a growth area for various reasons, not least of which is scientific"* as a witness to the House of Commons Science and Technology Committee. It is difficult to reconcile the views you expressed at that meeting with the stark omission in the STFC delivery plan of all Solar and Solar-Terrestrial science and the redundancies planned at the Rutherford Appleton Laboratory.

It is essential that you understand the approach required in solar system science, namely a holistic and long-term approach to understanding the complex Sun-Earth coupled system. The synergy of ground-based measurements on the Earth with those from spacecraft (those orbiting the Earth and those observing the Sun and other planetary bodies in the Solar system) generates an understanding vastly superior to that gained by isolated measurements. The influence of the Sun on the Earth and other planets clearly impacts our day-to-day existence (especially given our dependence on satellite technology systems) and as such necessitates the continued research and progress in understanding the near-terrestrial environments, not least of our own planet. To dismiss the UK ground based facilities and not invest in future observing missions of the Sun and non-Martian planets will severely hamstring future development and success in the planned space missions (our science directly addresses the dangerous environment spacecraft and astronauts work in), plasma physics (crucial to the science behind nuclear fusion) and our understanding of the climate changes that affect our planet (long-term data sets are critical in this endeavour). In the immediate future the removal of support for all ground-based solar-terrestrial facilities is nothing short of catastrophic to the capability of the UK to perform in an ever more crucial area of physics.

As early career scientists we are the scientific leaders of tomorrow; we will be the corner stone of the future knowledge-based economy. We want that economy to have strong foundations, not the weak and unstable framework that will be implemented if the current, unacceptable situation is allowed to stand. Not least in the arguments to save solar system science, along with the rest of Astronomy and Particle Physics, is that we form the back-bone of inspiring young minds into the physical sciences. The major cuts in the STFC delivery plan will stifle the development of the future physics talent of this country by irrevocably damaging a large number of university physics departments that depend heavily on STFC funding. Consequently, both the inspiration that our scientific results and outreach activities have on the younger generation and the general populus of the UK will be lost. More than this, our research is essential to the targets defined by the government as well as representing value for money by providing new science results at low operational running costs. As such, solar system science represents maximum economic and scientific return for the money invested. We therefore sincerely urge STFC to maintain support for solar system science, along with the rest of Astronomy and Particle Physics.

Although the early career scientists that make up S-cubed come from the different fields of Solar-Terrestrial, Planetary and Solar Physics, we are united in our concern as a wider scientific community. This is because we appreciate the value that links between our fields can bring to deliver pragmatic progress in issues that are not just of "scientific interest", but that fundamentally impact on the industrial, technological and economic issues that face our country today.

What steps will the STFC executive be taking to safeguard the future of Solar-Terrestrial, Solar and non-Martian planetary science within the research council? What is the STFC executive doing to rectify its appalling communication record with the astronomy, solar system science, particle and nuclear physics communities?

We look forward to hearing your response to the questions and issues raised in this letter.

Dr. Emma E. Woodfield

Miss. Gemma D. R. Attrill

For and on behalf of the following 63 solar system science early career scientists:

Dr Gary Abel, British Antarctic Survey
Sotiris Adamakis, University of Central Lancashire
Dr Ilya Alexeev, Mullard Space Science Laboratory, University College London
Chandrasekhar R Anekallu, Mullard Space Science Laboratory, University College London
Dr Vasilis Archontis, University of St Andrews
Dr Chris Arridge, Mullard Space Science Laboratory, University College London
Dr Sarah Badman, University of Leicester
Deborah Baker, Mullard Space Science Laboratory, University College London
Mathew Beharrell, Lancaster University
Laurence Billingham, Imperial College London
Peter Boakes, University of Leicester
Stephen Bradshaw, Imperial College London
Daniel Brown, Aberystwyth University
Dr Emma Bunce, University of Leicester
Dr Sarah Crowther, University of Manchester
Dr Silvia Dalla, University of Central Lancashire
Patrick Daum, Lancaster University
Dr Ineke de Moortel, University of St Andrews
Dr Mick Denton, Lancaster University
Dr Ranvir Dhillon, University of Leicester
Mark Douglas, University of Sheffield
Dr Richard Fallows, Aberystwyth University
Dr Rob Fear, University of Leicester
Elaina Ford, British Antarctic Survey
Colin Forsyth, University of Leicester
Nick Foster, University of Kent
Ross Galloway, University of Glasgow
Carlos Gane, University of Leicester
Keith Grady, University of St Andrews
Dr Eoghan Griffin, University College London
Dr Martin Grill, Lancaster University
Dr Adrian Grocott, University of Leicester
Suzanne Imber, University of Leicester
Dr Catriona Jackman, Imperial College London
Dr Andrew Kavanagh, Lancaster University
Stephanie Kellett, University of Leicester
Dr Duncan Mackay, University of St Andrews
Dr Rhona Maclean, University of St Andrews
Dr Steve Marple, Lancaster University
Dee McDougall, University of St Andrews
Dr James McLaughlin, University of St Andrews
Dr Helen Middleton, Aberystwyth University
Dr Steve Milan, University of Leicester
Dr Ryan Milligan, NASA Goddard (formerly at Queen's University Belfast)
Dr Tracy Moffat-Griffin, British Antarctic Survey
Michelle Muray, Mullard Space Science Laboratory, University College London
Dr Thomas Neukirch, University of St Andrews
Dr Jonathan Nichols, Boston University, USA (formerly at University of Leicester)
Dr Clare Parnell, University of St Andrews
Dr Gabrielle Provan, University of Leicester
Graham Routledge, Lancaster University
Dr Andrew Senior, Lancaster University
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Jo Sullivan, University of Southampton
Dr Dean Talboys, University of Leicester
Katie Turnbull, Lancaster University
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