



*Draft Minutes of the 78th Meeting of the ISOLDE Collaboration Committee
held on February 7th 2017*

Present: B. Blank, R. Catherall (P.T.), J. Cederkall (P.T.), D. Doherty, H. Fynbo, M.J. Garcia-Borge, P. Greenlees, K. Johnston, Y. Kadi, N. Marginean, A. Nannini, M. Pfützner, L. Schweikhard, N. Severijns, S. Siem, M. Venhart (via Vidyo)

Excused: A. Algora (replaced by O. Tengblad), K. Bharuth-Ram

Absent: S. Gilardoni, S. Harissopulos

Invited: J. Ballof (P.T.), P. Butler (P.T.)(via Vidyo), E. Fadakis, L. Gaffney (P.T.), E. Siesling (P.T.), T. Stora (P.T.), W. Venturini (P.T.), F. Wienholtz (P.T.)

(P.T. = Part Time attendance)

The meeting starts at 09:00 h

1. Introductory remarks

The ISCC chairperson, B. Blank, opens the meeting and welcomes D. Doherty, the new representative for the United Kingdom, as well as O. Tengblad who is replacing A. Algora (Spain).

2. Approval of the Minutes of the last meeting of November 2nd, 2016

The minutes from the previous meeting are approved.

3. Status of HIE ISOLDE installation and shut down work - *Erwin Siesling*

E. Siesling briefly summarises the main activities that have taken place so far during the shutdown with regard to cryomodules, transfer lines and services. He goes on to describe the work completed in order to prepare for the transport of the 3rd cryomodule from SM18 to the ISOLDE hall on 24th January. The committee is told that, apart from the intertank installation which has a delay due to issues with the supports, installation work including cryogenics is on schedule.

E. Siesling informs the committee that the dismantling of the 3rd beamline supports and infrastructure is well advanced ready for the arrival of the ISS magnet on XT02 by 3rd March at the latest. If the magnet is not transported into place by this date, work to reinstall the 3rd beamline will commence and a decision will be made at a later date whether to remove the beamline again or make a hole in the roof to install the ISS magnet.

The overall HIE-ISOLDE installation planning for 2017 is presented and the committee is told that the project is still on track to start physics at the end of June this year. E. Siesling thanks the very large team involved in this project for their flexibility and commitment.

4. HIE-ISOLDE Users interface and beam properties for 2017 - Eleftherios Fadakis

E. Fadakis gives a brief overview of the new REX/HIE-ISOLDE Users interface and informs the committee that, in 2017, the operators will deliver beam as far as the Faraday cup in the last diagnostics box before the experiment. Operators will not be responsible for injecting beam into the users experiment. E. Fadakis informs the committee that work is on-going to produce a system which will indicate exactly where a problem occurs.

The committee is told that, in addition to the yearly separators courses given to ISOLDE Users, a crash course will be provided on request before each experiment. Names must be provided a week in advance in order to grant users access to the vacuum system.

E. Fadakis then discusses the beam properties expected for 2017 including the highest reachable energy of the beam with the third cryomodule in place and with $A/q=4.0$. A discussion follows about whether a dedicated energy measurement should be made as a default for every experiment or if a best guess energy would be sufficient for most experiments. At present the dedicated energy measurement takes about four hours but it is expected that this can be reduced to one hour in the second half of this year's campaign. The committee requests that as a default the beam energy for each experiment be measured. If an experiment requires a more precise measurement, the spokesperson should inform the operators in advance. E. Fadakis goes on to explain that the expected beam pulse length in 2017, with a RF pulse length of 2ms, will be approximately 1.7ms and requests that the experiment spokesperson inform the operators in advance if slow extraction is required as this takes typically a couple of hours to set up. Originally the nominal minimum A/q was 2.5 and the nominal maximum was 4.5 but now the maximum A/q has been found to be 4.33. This is because several REX amplifiers are not reliable at the power levels required for beams with an A/q of 4.5.

An ideal HIE-ISOLDE operations schedule is presented which would involve:

- Alternating high and low energy physics with GPS preferred for HIE-ISOLDE
- Target installation on Friday morning, set-up Monday to Thursday, beam to users on Thursday evening and using Friday as contingency
- Beam characterization and isotope/energy change on Monday if required
- Target reaching its expected lifetime on Wednesday morning
- Stable beam being available for users during the weekends

The committee is told that if the target is late then installation would move from the Friday to the Monday; it would not take place over the weekend.

5. Planning of HIE-ISOLDE phase 2 until completion - Yacine Kadi

Y. Kadi summarises the Phase 1 recommissioning work that has taken place since the end of the 2016 physics run. He then presents the project planning for the Extended Year End Technical Stop (EYETS) which includes the maintenance and consolidation of the cryogenics. In April, after the planned capacity test with maximum heating power in the three cryomodules, it will be known if it is possible to run with four cryomodules using the present cryo-plant. With regard to the issues that emerged during the cooling process in 2016, and reported at the ISCC meeting in June last year, Y. Kadi states that he is confident of a better situation for the start up in 2017.

The overall project planning for 2017 is presented and the committee told that half of the commissioning with the three cryomodules will take place warm and half cold. The Hardware Commissioning Procedure for HIE-ISOLDE cryomodules can be found in the CERN document

HIE-0-HCP-0001. Y. Kadi explains that the detailed optimization of the beam has not been included in the present planning as it would mean pushing back the start of physics by about two weeks. However, this must take place before the end of 2017 so it was concluded that it would be better to

stop later in the year for this to be done after the summer student, hired by M. Fraser, has completed the beam transfer simulations.

The status of the remaining cavities for Phase 2 is then summarised. Production of the seamless cavities is progressing well and the CERN produced cavities are almost finished. In July there will be six cavities available and the five with the best performance will be installed in CM4. A number of spares will also be prepared. The committee is informed that only limited installation work will be required for CM4 in 2018.

6. EYETS (Extended Year End Technical Stop) Activities at ISOLDE - Richard Catherall

R. Catherall informs the committee that all used ISOLDE targets are sent to the ISR storage once a year, in January, in order to lower background levels in the target area. This takes place on a Saturday when less people are on site and this year 36 targets were transported.

The target area interventions planned for the present EYETS are then briefly summarised:

- Finalisation of the Montrac system
- Program verification of the Kuka robots
- Frontend maintenance and modifications
- LIEBE target preparations in anticipation of tests towards the end of 2017

The committee is told that this year the water was turned on at ISOLDE on 23rd January and beam has been available for initial testing of equipment and fault finding from 27th January. Both separators will be stopped for 10 days on 24th February for Frontend maintenance and the re-start is planned for 10th March.

R. Catherall informs the committee that, after the request from CRIS at the last ISCC meeting for more space, the LC0 beam line has been removed and will be stored in building 275. He goes on to summarise the hall interventions that are planned before the end of EYETS as well as the work to refurbish the Class A laboratory ventilation ducting.

The committee is reminded that, following an incident last year with the handling of actinide nano-material, all production of nano-material targets (with the exception of CaO) is suspended. This is partly due to a lack of laboratories to provide a suitable and safe environment for their handling; two laboratories are required, one for actinide and another for non-actinide materials. The committee is informed that two propositions to solve this issue have been presented and both have full support from the EN management. The first is to acquire the offices 26-R-019 to 025 which are adjacent to the off-line separator 2 laboratory and the second is to extend the Class A laboratory which will cost approximately 1.5 million Swiss francs. R. Catherall tells the committee that, in order to limit the effect this issue could have on the scientific program, he will ask for a derogation for non-pyrophoric non-actinide materials and investigate a temporary solution for actinide materials.

Finally, the plans for RILIS in 2017 are briefly summarised including laser consolidation and the continuation of RILIS development with new schemes for Silicon, Selenium, Erbium and Lutetium as well as the study and optimization of VADLIS. The committee is made aware that there has been a reduction in manpower at RILIS due to the departure of three people in the last six months and the arrival of only one.

7. MEDICIS: Commissioning plans for 2017 - Thierry Stora

The status of the MEDICIS project is briefly summarised and the committee is told that the collection chamber, which is a critical part of the project and for which it was necessary to obtain a licence, is progressing well. The MEDICIS planning for 2016/2017 is presented and the committee told that off-line commissioning is planned for two months during this summer followed by commissioning with

beam in September. Y. Martinez and R. Formento, one of the 15 Marie Curie fellows contributing to the project, will assist with the commissioning program.

T. Stora informs the committee that the start of MEDICIS operation is planned for the end of 2017. A call for requests will be made in October and it is planned to start operation with light targets. It is clarified that the MEDICIS Collaboration will have its own MoU and that the ISOLDE Spokesperson will be an ex-officio member of the MEDICIS Executive Board. The MEDICIS schedule will be decided by the Executive board and reported to the CERN INTC committee.

As August will be the last chance to visit MEDICIS, T. Stora invites the committee to visit the facility during the next ISCC meeting in June.

The committee is informed that a CERN post has been requested for the operation of MEDICIS and that a document is in preparation regarding medical collections at ISOLDE which should clarify the use of radioactive samples prepared at CERN for the use on humans. CERN does not allow on site tests on animals so hospitals using isotopes from MEDICIS would be responsible for any tests carried out on animals or humans.

8. Presentation of the activities of the GUI group: Target test plans for 2017 - Sebastian Rothe

S. Rothe gives a brief overview of ongoing developments with nano materials, LIEBE target tests, molecular beams, negative ion sources and the p2n converter. He informs the committee that the expected target and ion source development at ISOLDE during 2017 will include:

- Sc: Ti Foils
- Te: yields with RILIS
- M(CO)_x formation at the MEDICIS irradiation point
- ThO felt + Negative ion source
- LIEBE target online at GPS
- STAGISO beam test
- Si from UCx
- TiC-CNT (pending safety clearance)

9. INTC matters - Karsten Riisager

The new INTC chairman informs the committee that ISOLDE now has a backlog of 1475 shifts (570 for low energy beams and about 900 for accelerated beams) which corresponds to three years of running at the facility. With another 450 shifts requested at the February INTC meeting, the committee is told that this situation is not tenable and needs to be addressed otherwise it will remain through LS2.

K. Riisager tells the committee that there have been proposals submitted to the INTC where there is no spokesperson from an institute from a member state of the ISOLDE collaboration. This is of concern because the experiment would not be covered by the MoU with CERN and the collaboration contributes financially towards the running of the ISOLDE facility. A discussion follows about how to address this issue and the committee decides that, for the time being, at least one spokesperson on a proposal must be from an institute in a country that is a member of the ISOLDE collaboration.

10. Web page with yields - Jochen Ballof

The status of the project to renew the ISOLDE yield database is presented as well as a number of new features. The major modifications will be:

- The extrapolation of yields in which the release of the target is well understood
- Yields for target in non-optimised operation conditions with respect to contaminants

- Submission of yields and faster availability

The new database will allow multiple layer data entry but any information entered by users will first be validated by the TISD team before it is published on the website. The data model has been implemented and data consolidation and migration completed. The basic new web interface is now ready for new yields to be inserted while the addition of new advanced features will continue.

The committee thanks J. Ballof for his work on and encourage him to complete the project and make the web page available as soon as possible.

11. MR-ToF prototype for ISOLDE - *Frank Wienholtz*

F. Wienholtz briefly explains the principle behind the MR-ToF (Multi-reflection time-of-flight Mass spectrometer) and that it could be used at ISOLDE as an additional tool for beam optimization as well as separation. Compared to the MR-ToF already in use at ISOLTRAP, the ISOLDE device will require higher ion energy and mirror potential. The time needed for separation will need to be decreased by about a factor of 4 so transmission has to be improved, mirror electrodes and ion optics have to be optimized for the ISOLDE beam transversal emittance and ion capacity of the MR-ToF device increased.

Regarding the positioning of the future MR-ToF, the committee is told that, as many types of experiments would profit from such a device, its ideal position would be where it could provide beam to all experiments. However, space at ISOLDE does not allow this at present so this issue still has to be resolved.

F. Wienholtz estimates the material cost of the project at about 200 kCHF but this does not include integration. He goes on to acknowledge the people involved in the project especially the local ISOLTRAP team.

M.J.G. Borge explains that F. Wienholtz is an Applied Fellow partly funded by CERN and partly by ENSAR2. The project to produce a prototype is taking place in association with the CERN EN-STI-RBS section and in collaboration with the University of Greifswald.

12. ISS commissioning plans - *Liam Gaffney*

The committee is reminded that the ISOLDE Solenoidal Spectrometer (ISS), the magnet for which arrived at CERN from Brisbane in April 2016, will be dedicated to transfer reactions with HIE-ISOLDE. The new Si array for the spectrometer is designed and under construction but, as it will not be ready in 2018, first experiments with ISS will be carried out with an array from ANL.

L. Gaffney briefly explains the principle of the technique to be used by the spectrometer and informs the committee that two experiments using ISS have already been approved by the INTC. The ISS installation planning is presented and the committee told that it is hoped to take delivery of stable beam at the end of 2017 and perform the first experiments in 2018 before LS2. L. Gaffney briefly summarises the preparation work that has taken place already which included successful vacuum tests and, after solving initial filling issues, the start of cooling on the 6th of February.

Regarding the integration of ISS, the committee is told that a team from Daresbury UK is working alongside the HIE-ISOLDE team and that there is a strict deadline of 3rd March 2017 before which the ISS magnet has to be in place in the hall. After this date the 3rd beamline, which has been removed to allow delivery of the magnet, will be reinstalled.

L. Gaffney ends by presenting the ISS collaboration and thanking the UK and HIE-ISOLDE teams presently working on the installation project.

13. Highlights of the running period. Schedule plans for 2017 - *Karl Johnston*

An overview of the successful physics runs that took place in 2016 is given including highlights from the ISOLDE Decay Station, solid state physics and the new VITO beamline. In 2016 protons were delivered to ISOLDE from 11th April and dedicated low energy running took place for 151 days until 9th September. HIE-ISOLDE was then given priority for the remaining 66 days of the running period. K. Johnston then summarises the HIE-ISOLDE experiment runs that took place including the problems that occurred. It is noted that some relatively small issues had a knock on effect for a number of days due to manpower not being available; in the future training and improvements in controls should reduce the load on operators and aid the solution of problems that occur. It was noted and highly appreciated that the HIE-ISOLDE team showed a high level of commitment towards getting physics runs started on time in September.

The distribution of shifts between the various types of experiments that took place at ISOLDE in 2016 is then presented followed by a breakdown of how the machine was used during the year.

The committee is informed that physics should start on 24th April in 2017 and protons will stop on 20th November giving a running period of 210 days. Low energy experiments will be scheduled until week 26 after which HIE-ISOLDE and low energy physics will be interleaved. The autumn will be a very challenging period with a negative ion run, the MEDICIS start-up and LIEBE target tests planned.

A brief discussion takes place about the level of the shift backlog which is at present about 1500, with between 350 and 400 shifts able to be scheduled each year. It is decided to discuss this matter in depth at the next ISCC meeting.

K. Johnston informs the committee that about 80% of runs in 2016 used RILIS ionised beams but since then there has been a loss of expertise which will make it extremely difficult to maintain these levels in the future. Students and fellows are asked to help with the operation of RILIS but they have their own projects and commitments in addition to RILIS maintenance, setup and operation.

The committee is informed that the safety training required for access to the ISOLDE experimental hall now consists of 3 online courses (Safety at CERN, RP supervised and basic electrical awareness) and two hands-on courses (electrical awareness and RP hands-on). The practical courses take place every Tuesday from 13:00 to 17:00 at the training centre on the Prevezsin site. Registration for these courses must be completed in EDH or via email for new users and, if possible, at least 3 weeks in advance as the trainer has to travel from far away. The CERN safety training group will cancel the courses if no one has registered one week before hand. K. Johnston informs the committee that access requests for the ISOLDE hall now need to be made via the ADAMS system (<https://www.cern.ch/adams>) instead of EDH. The committee is reminded that helmets and safety shoes are obligatory in the hall as well as the control of both hands and feet on entering and leaving.

The committee is told that a visit from the Swiss OFSP (Office Federal de Sante Publique) in January resulted in the following requirements:

- New highly shielded chamber needed for medical isotopes (design pending approval)
- Re-configuration of GLM/GHM space for better practice
- Work Dose Planning to be followed for more collections

14. EURISOL DF - *Maria Jose Garcia Borge*

M.J.G. Borge explains that as EURISOL was endorsed by NuPECC in its 2010 Long Range Plan as being the highest long term priority for low energy nuclear physics in Europe, it is important to put

the EURISOL-DF initiative in place as an intermediate step towards the EURISOL facility. The added value of the initiative can be summarised as:

- An optimal approach to study major questions in modern nuclear structure physics, nuclear astrophysics and related applications
- European coordination of EURISOL related physics and technical R&D i.e. physics questions that cannot be fully answered by carrying out an experiment at only one facility
- Secured resources for operation of the ISOL facilities and additional resources for R&D and detectors
- Clear strategy for upgrades of the European ISOL facilities towards EURISOL

The defined goals of the EURISOL-DF initiative are then discussed, in particular to have “a single entry point for a significant fraction (up to 50%) of the Radioactive Ion beamtime dedicated at ISOLDE-CERN, SPIRAL2-GANIL and SPES-INFN for the EURISOL-DF experiments and distributed via the EURISOL-DF Program Advisory Committee”. The committee expressed the view that having separate PACs for different facilities helps to provide fairness of selection and so would prefer this particular goal to be replaced with an advisory committee to improve the complementarity of facilities. Hence the phrase “Resources and beam time allocation” should be removed from the EURISOL-DF organisation plan.

The committee is informed that the next steps planned for this initiative are:

- Draft of the full EURISOL-DF proposal including the feed-back from the Leuven conference ready by the end of February 2017
- Consultation of the draft with the involved countries and community with an involvement of the EURISOL User Executive Committee: March-July 2017
- Submission of the EURISOL-DF project to ESFRI by July 2017

15. News from the ISOLDE Group and MoU - *Maria Jose Garcia Borge*

M.J.G. Borge summarises the present manpower situation in the ISOLDE Physics Group.

- **Associate:** Bertram Blank (September 2016 to August 2017), Angela Bracco (February to July 2017), Andrei Andreyev (April 2017 to March 2018). **Deadline for new applications 9th March 2017.**
- **Corresponding Associate:** Joao Pedro Esteves De Araujo (January to February 2017), Olof Tengblad (February to May 2017). **Deadline for new applications 9th March 2017.**
- **Staff Members:** Magda Kowalska (ERC betaDropNMR) (October 2015 to September 2018), Stephan Ettenbauer (ERC MIRACLS)(February 2017 to January 2021)
- **Fellows:** Liam Gaffney (October 2016 to September 2019), Kara Lynch (January 2015 to December 2017), Vladimir Manea (January 2016 to December 2017), Akira Miyazaki (June 2014 to May 2017), Stavroula Pallada (April 2017 to March 2019), Andree Welker (2017 to May 2019), Frank Wienholtz (January 2016 to December 2018). **Deadline for new applications 28th February 2017.**
- **Doctoral Students:** Razvan Lica, Fixed decay station doctoral student (September 2014 to August 2017); Stavroula Pallada (Doctoral Program with Greece for life sciences) (March 2014 to February 2017), Andre Welker (Doctoral Program with Germany) (February 2015 to January 2018), Robert Harding (CERN-ERC) (January 2017 to September 2018), Jacob Snall (Doctoral student Lund-CERN) (August 2016 to July 2019).

M.J.G. Borge announces that a Nuclear Astrophysics Course, given by F. de Oliveira, G. Martinez Pinedo and O. Sorlin, will take place at ISOLDE from the 9th to 11th May 2017.

On 10th and 11th March the NuPECC meeting will be held at CERN which will include a mini-workshop on the Friday morning and visits of ALICE and ISOLDE

<http://indico.cern.ch/event/611038/>. Efforts are being made to convince CERN to apply to have a representative within NuPECC. The dates of this year's ISOLDE Workshop and Users Meeting will be the 4th to 6th December and the organisation of EMIS2018 is underway.

The committee is informed that the call for contributions to this year's ISOLDE newsletter has been launched with the deadline for submissions set at 28th February 2017.

The status of ENSAR2 TNA at ISOLDE is then summarised. In 2016 a total of 40 experiments received support with 683 subsistence days being paid to 133 ISOLDE Users which corresponds to a total of 87,288 CHF. Users from non-EU institutes received 6.6% of the payments while users involved in applications experiments received 14.6%. The distribution of the ENSAR2 TNA subsistence between the countries of the institutes of ISOLDE Users involved in experimental runs in 2016 is presented.

M.J.G. Borge reports that the final public discussion of the new NuPECC Long Range Plan took place at the town meeting hosted by GSI-FAIR in Darmstadt from 11th to 13th January 2017.

Recommendations were made for the strong support of construction and augmentation of innovative ISOL facilities in Europe as well as for the new EURISOL-DF initiative which aims to maximise common efforts to solve scientific and technical challenges.

The committee is told that the new ISOLDE MoU came into effective from January 2017. It is valid until the end of 2019 and includes an automatic renewal clause which has allowed the reduction of the period covered from 5 to 3 years to facilitate the compromise made by member countries and the update of annexes. Of the 16 countries to which the MoU was sent 12 have already signed the document: Belgium, CERN, Denmark, Finland, France, Germany, Poland, Romania, Slovakia, South Africa, Sweden and the UK. The new MoU does not include India or Ireland but it is hoped that they will re-join the collaboration in the future. Exchanges with Bulgaria and Portugal regarding entering the collaboration are still ongoing.

M.J.G. Borge informs the committee that an agreement is being negotiated in order for the TRI μ P zero-degree spectrometer to be donated to ISOLDE by KVI in the Netherlands; it is planned to place the HIFI (HIE-ISOLDE Fragment Identifier) spectrometer after the MINIBALL setup. The fundamental interactions and symmetry group at the University of Groningen has renewed interest in preparing a setup to perform measurements related to atomic parity violation for which a letter of intent was submitted in May 2010 (INTC-I-115). The Dutch group has expressed a hope that, due to this donation to ISOLDE, they can be given a status equivalent to a collaboration member in order to access the services of the facility. A discussion follows about this request and the committee agrees that this type of donation cannot replace the payment of the collaboration membership fee. It is decided to invite the group from the University of Groningen to give a presentation at the next ISCC meeting in June.

The committee members are provided with the Collaboration expenditure for 2016 and shown the expected expenditure in 2017 including the two loans for HIE-ISOLDE and 45 kCHF for RILIS manpower. In 2016, Greece paid their Collaboration fees up to and including 2012. Hence, at present, the outstanding fees are 60kCHF from Norway for 2016 and 30kCHF from Poland for the 2nd half of 2016, as well as a total of 120kCHF from Greece for 2013 to 2016.

After a recent request from RILIS personnel, a discussion takes place about who should appear as author on scientific papers arising from experiments at ISOLDE. The committee agrees that there is a need to define what is classified as a service and what as research at ISOLDE. It is decided to invite V. Fedosseev to present his view on this matter with relation to RILIS as well as the issue of RILIS manpower at the next ISCC meeting.

The committee is reminded of the situation of the ISOLDE User Support Officer, J. Weterings, whose salary is paid half by the CERN EP department and half by the collaboration. The funds are used to cover the employment contract with the University of Oslo. M.J.G. Borge explains that three factors have made the situation uncomfortable:

- A large increase in retained taxes as, from beginning of 2016, the salary is taxed in Norway instead of the country of residence, France.
- An increase in tasks from the EP department, such as travel claims, as the service given by the EP-secretariat to the ISOLDE personnel (staff, fellows, students) has disappeared.
- An increase in collaboration members in recent years.

The committee discuss the situation and agree to make more funds available for the post, hoping to obtain a similar gesture from the EP department due to the increase in tasks.

16. Publications and Laboratory portrait - *Maria Jose Garcia Borge*

The collaboration is informed that the ISOLDE Laboratory Portrait, to be published in J. Phys. G. in 2017, is progressing well. The Experimental Facilities and Methods section has received 14 of the invited contributions with 4 still pending while 2 out of the 3 invited theoretical contributions have been submitted. There have also been 10 articles received by submission. Five of the contributions received have already been fully accepted by the journal. (At the time of writing these minutes, all but one of the invited contributions have been submitted.)

M.J. G. Borge tells the committee that a call has been made for details of all theses from the last 5 years resulting from research at ISOLDE and is proud to announce that 117 theses (PhD and Masters) have been completed in the period from 2012 to 2016 with ISOLDE related data. The list is available on the ISOLDE website via <http://isolde.web.cern.ch/publications>. The committee is reminded that all theses should be uploaded to the CERN CDS system.

The committee is informed that ISOLDE has recently appeared in an issue of Nuclear Physics News <http://www.nupec.org/npn/npn264.pdf> and an article entitled “HIE-ISOLDE, the project and the physics opportunities” was published in the European Physical Journal A in November 2016, Eur. Phys. J. A (2016) 52: 334, <https://doi.org/10.1140/epja/i2016-16334-4>, http://epja.epj.org/articles/epja/abs/2016/11/10050_2016_Article_703/10050_2016_Article_703.html.

17. Dates of the next meeting

The dates of the next ISCC meetings are **Tuesday 27th June** and **Tuesday 7th November 2017**.

Meeting ends at 17:45

N.B. The overheads of the above presentations can be found via <http://indico.cern.ch/event/600252/>