OPEN SESSION
Wednesday 2 February 2011 at 13:30 in Council Chamber

The Chairman of the INTC, Peter Butler, opened the meeting and announced the agenda.

ISOLDE Technical and Physics Report

The ISOLDE Technical Coordinator, Richard Catherall, summarized the main activities of the winter shutdown. i) Used targets were removed and transported to their final storage at the ISR ring and the impact of the new procedure requested by the radioprotection group will be assessed. Meanwhile, a new 5-year buffer zone for the targets is under preparation. ii) Work aimed at exchanging the GPS front-end is under way. The old front-end (#4) has been removed and presently cables and the old 60-kV insulator are being exchanged while the new front-end (#7) is undergoing final tests in the offline lab. In phase 1 of the operation 80% of the provisional collective dose has been collected and 60% is expected for phase 2. iii) The REX vacuum upgrade is also advancing: the turbo-pumps and vacuum gauges will be soon exchanged and the software is being tested. At the same time, REX-trap is undergoing an upgrade of its controls. iv) the RILIS team is moving the dye lasers to another table in order to make space for the new Ti:Sapphire lasers which will be installed during this shutdown. In order to allow optical pumping in the ISCOOL the HRS launch mirror system has been redesigned and the laser path for ISCOOL pumping has been prepared. v) Tests of the LIST (Laser Ion Source Trap) are ongoing at the offline ISOLDE separator. vi) Remaining shutdown work includes the installation of new picoameters for faraday cups, implementation of redundancy in tunnel fire detection, move of HRS Tesla meters to outside of the separator area, hardware renovation of ISOLDE timing, as well as general maintenance. vii) Concerning safety, most ISOLDE interventions are classified as radioprotection ALARA 3 (As Low As Reasonably Achievable), which requires many documents to be prepared and will increase the delay in intervention in future. To allow traceability of beams delivered to experiments, a database is under investigation to monitor machine operation and RIB distribution.

The ISOLDE physics coordinator, Magdalena Kowalska, presented a report on the ISOLDE physics. In 2010 ISOLDE delivered successfully 350 RIB shifts (the same amount as in 2009), from which 265 (76%) were taken by INTC experiments and the remaining 85 (24%) were used by standard target check (target and ion source development and REX machine development) and coordinator’s reserve (debugging, recovery, tests, LOIs). Out of 41 research projects (IS experiments) 7 could not be provided with the requested beam. The
integrated number of protons was 7.7e19 with 4.0e19 taken on GPS. The counted shifts amount to 56% of all possible shifts which could be used, which is comparable to the previous 5 years. The shift distribution among different kinds of experiments was also comparable to previous years: nuclear physics and weak interaction studies took 46% of shifts, atomic physics techniques and solid state physics 13% each, biology and medicine 1%, and the rest was shared between coordinator’s reserve and development experiments. Target use (25 units in total) was also similar to previous running periods: 72% of shifts made use of one of 13 UCx targets, while the rest utilised Ta (12%), YO, ZrO, Sn, and Pb targets. RILIS was used for 151 shifts for 20 approved experiments with over 2000 hours of online work. 100 REX shifts took 37% of INTC shifts compared to 31% and 43% in 2009 and 2008 respectively. The accelerator schedule for 2011 was presented (unchanged since the previous INTC): first protons will be delivered to ISOLDE on April 24 with first physics run coming a week later. The protons will be available for 29 weeks (vs 29.5 in 2010) until November 20.

For 2011, ISOLDE is guaranteed 34-37% of proton pulses, resulting in 1.5 µA average intensity (compared to 2 µA agreed RP limit). The requirement of safety files for fixed and visiting ISOLDE experiments was also presented. Finally, a short summary of 2009-2010 ISOLDE publications, which are now accessible online, was made and highlights of 2010 publications were presented: they included the results of measurements performed with laser spectroscopy, mass spectrometry, transfer reactions at REX, and beta-delayed fission.

Report on the HIE-ISOLDE Project

The HIE-ISOLDE Project Leader, Yacine Kadi, presented the status of the project. The latest news from the CATHI (Marie Curie Initial Training Network) was given, where 5 Fellow positions will be filled in February 2011 and 9 new positions have been just posted. The schedule for the RF measurements for prototype cavities #1 and #2 was outlined: the fourth RF tests of high-β prototype cavity #1 will take place between mid January and mid-February 2011 (and until mid-March for first tests of cavity #2). These will be followed by new sputtering of cavity #1 by mid-April and new cold RF tests of cavity #2 by mid-May 2011. The resources available for these tests were also outlined, where the critical aspects are the availability of CERN clean rooms and their operators and the need to share resources with cavity R&D for SPL, CLIC and LHC spare cavities. The material budget includes 17.7 MCHF for the LINAC from external funds and 16.3 MCHF covered by CERN (on infrastructure, design studies, and safety). The assured 45% of the total external funding is covered by K.U. Leuven (LINAC parts), ISOLDE Collaboration, the recently approved Spanish grant “Industry for Science Program”, and the EU Interregional Program for Scandinavian countries (for the construction of a fully equipped cryomodule prototype). Additional fund applications include the LOI to the Wallenberg Foundation (Sweden), Spanish Grant proposal for MiCINN project (to be resubmitted), discussion to fund one fully equipped high-β cryomodule within the KoRIA Project (the KoRIA-ISOLDE collaboration will be on the agenda of the next CERN-Korea Committee meeting in April), and discussions within the context of an Indian RIB Project. Active HIE-ISOLDE collaborations include K.U. Leuven (Belgium), Cockcroft Institute, Liverpool and Manchester Universities (UK) and ESS and Lund University (Sweden), while collaboration protocols have been signed with LNL-INFN (Italy), GANIL/Spiral2 (France), VECC & SAHA (India), and SKKU (Korea). The construction of the machine (including beam lines) will be staged according to the availability of the funds and/or in-kind contributions.

In January 2011 a joint meeting of the HIE Steering Committee and International Advisory Panel (IAP) took place. The IAP recommendations were positive and included the following
action points: i) speed up cavity prototype cold tests and cryostat design, ii) perform RP studies to decide on the layout of experimental facility, iii) enhance the coordination with the HIE-ISOLDE physics group and with SPIRAL2, and iv) plan for 10 MeV/u but give priority to 5.5 MeV/u upgrade.

Activities to take place in 2011 include the superconducting cavity prototype cold tests (by June), start of the civil engineering work (May), cryomodule design (by end of 2011), radiation protection calculations (by summer 2011), and the ordering of the cryogenics plant.

**Status Report of n_TOF**

The spokesperson of the n_TOF Collaboration, Enrico Chiaveri, summarized the status of the n_TOF facility and presented the proposed n_TOF Experimental Area 2 (EAR2). The n_TOF campaign 2010 has been excellent in terms of beam efficiency and innovation and it witnessed first experimental campaigns making use of the $^{10}$B-water moderation circuit and Work Sector Type-A (WSTA). The following successful runs took place: studies of $^{54}$Fe(n,$\gamma$) and $^{24}$Am(n,$\gamma$) (4GBq) combining TAC (4$\pi$ BaF$_2$) + C$_6$D$_6$, first test for measuring (n,lcp) with diamond detectors, as well as first n_TOF experiments for simultaneous (n,$\gamma$)+(n,f) using TAC and MGAS and finally angular distributions of fission fragments (PPAC). Results of ongoing analysis from 2009/10 campaigns were presented in several international Conferences and Workshops.

During 2010 in total 1.2e19 protons were delivered to n_TOF, which was lower than the requested 1.55e19 protons but still above the planned intensity of around 1.0e19. 8 runs took place for 4 n_TOF experiments (n_TOF12-15) and the result highlights were briefly discussed. The 2011 n_TOF schedule was presented, with planned start-up mid-March and 1.6e19 protons to be delivered by the end of November, which should allow advancing in most of the approved proposals (allocated in order to carry out a total of 8 measurements using 11 different samples, 5 detection systems, and 2 different collimator configurations). The innovations for the upcoming campaign are: first use of MGAS for measuring $^{33}$S(n,$\alpha$) which is interesting for medical applications, use of a large area pCVD diamond for $^{10}$B(n,$\alpha$) beyond the MeV frontier, use of MGAS for measuring (at high energy) $^{240,242}$Pu(n,f) and the first (n,$\gamma$) measurement on the radioactive $^{63}$Ni target. The challenges will mainly come from the use of new (or combinations) of detection systems and the unprecedented accuracy aimed for the $^{238}$U(n,$\gamma$) measurement. At the same time, the n_TOF Collaboration will benefit from the arrival of new member institutes.

Finally, plans for a new experimental (EAR2) area were discussed. The EAR2 includes a vertical neutron flight-path length of about 20 m perpendicular to the proton-beam direction and will provide a neutron flux enhancement and drastic reduction of the flash at the moment of proton arrival. The construction of EAR2 is in line with the NuPECC Long Range, aiming at provision of high quality nuclear data essential for nuclear energy and other applications (e.g. radioisotope production, nuclear astrophysics, instrumentation development for fusion, etc.). The expected neutron flux at EAR2 is expected to be at least by one order of magnitude higher than at EAR1 over a wide range of neutron energies. Thanks to this the experiments could be performed on very small samples, on isotopes with very small cross sections, and in much shorter time. For the nuclear waste transmutation projects (or future generation nuclear energy systems), the EAR2 would allow the fission cross-section of Pu isotopes and minor actinides with half lives of a few tens of years to be measured. Concerning nucleosynthesis by the slow neutron capture (s-process) the EAR2 options for measurements of so far
inaccessible reaction rates will provide a boost for the understanding of neutron capture nucleosynthesis during the He burning phases of stellar evolution.

The following proposals were then presented:

**CERN-INTC-2011-002, INTC-P-290**, Single-particle states in $^{81}$Zn populated in single-neutron transfer reaction $^{80}$Zn(d,p), R. Orlandi

**CERN-INTC-2011-003, INTC-P-251-ADD-1**, The role of In in III-nitride ternary semiconductors, K. Lorentz

**CERN-INTC-2011-004, INTC-P-199-ADD-1**, Shape effects along the Z=82 line: study of the beta decay of $^{186,188}$Pb, A. Algora

**CERN-INTC-2011-005, INTC-P-291**, Shape coexistence in the lightest Tl isotopes studied by laser spectroscopy, A. Andreyev

**CERN-INTC-2011-006, INTC-P-235-ADD-2**, Detailed beta-DF studies of $^{202}$Fr and a search for $\beta$DF of $^{204}$Fr, A. Andreyev

**CERN-INTC-2011-007, INTC-P-292**, Resonance proton scattering of $^{22}$Mg and $^{21}$Na, J. Cederkall

**CERN-INTC-2011-008, INTC-P-244-ADD1**, Measurements of octupole collectivity in odd-mass Rn and Ra nuclei using Coulomb excitation, D. Joss

**CERN-INTC-2011-009, INTC-P-293**, Study of the odd-A, high-spin isomers in neutron-deficient trans-lead nuclei with ISOLTRAP, T. Cocolios


**CERN-INTC-2011-011, INTC-P-295**, Radioactive probe studies of coordination modes of heavy metal ions from natural waters to functionalized magnetic nanoparticles, V. Amaral

**CERN-INTC-2011-012, INTC-P-296**, Coulomb excitation of $^{116}$Te and $^{118}$Te: a study of collectivity above the Z = 50 shell gap, T. Grahn

**CERN-INTC-2011-013, INTC-P-297**, Determination of the Magnetic Moment of $^{140}$Pr, W. Nörtershäuser

**CERN-INTC-2011-015, INTC-P-299**, First Study of the Stability of the N=126 Shell Closure, S. Kreim

**CERN-INTC-2011-016, INTC-P-300**, Shell structure and level migrations in zinc studied using collinear laser spectroscopy, B. Cheal

**CERN-INTC-2011-018, INTC-P-301**, Study of $^{13}$Be through isobaric analog resonances in the Maya active target, R. Raabe

**CERN-INTC-2011-019, INTC-I-133**, Storage ring facility at HIE-ISOLDE, K. Blaum

**CERN-INTC-2011-020, INTC-P-302**, Simultaneous spectroscopy of $\gamma$ rays and conversion electrons: Systematic study of E0 transitions and intruder states in close vicinity of mid-shell point in odd-Au isotopes, M. Venhart

**CERN-INTC-2011-021, INTC-P-303**, A=225 implantation for $^{221}$Fr source for TRIUMF atom trap, J. Behr
CLOSED SESSION

Thursday 3 February 2011 at 11:00 in room 60-6-002


Apologies: R. Julin

1. INTRODUCTORY REMARKS

The Chairman opened the meeting and announced apologies from Rauno Julin, who had sent his comments via email. Furthermore, he welcomed Zaher Salman from PSI and Jan Vaagen from Bergen University, who joined as new INTC members, as well as a new ex-officio member, Eric Bertoumieux from CEA-Saclay and CERN, who is the new n_TOF Technical Coordinator.

2. MINUTES OF THE LAST INTC MEETING

The minutes of the 38th INTC meeting held on 4 and 5 November 2010 were approved without amendments.

3. STATUS OF ISOLDE

There were no comments to the technical presentation on ISOLDE.

The number of ISOLDE shifts was shortly discussed: about 800 shifts are outstanding, plus those to the approved at the present meeting. Out of these, about 350 shifts are delivered per year.

Feedback on the work of the ISOLDE new Technical Advisory Committee was positive and the written comments made by TAC were found useful by INTC members.

4. REPORT ON HIE-ISOLDE

The committee enquired as to the status of the collaboration strategy. Collaboration protocols have been signed between CERN/ISOLDE and GANIL (SPIRAL2), LNL-Legnaro (SPES), SKKU (Korea), and VECC and SAHA institute (India). Korea is considering joining the ISOLDE collaboration. The collaboration with SPIRAL2 concerning detector development was also discussed.

The IAP recommendations were also discussed and clarified. With respect to the energy upgrade the priority should be to complete the upgrade to 5.5MeV/u while preparing for the 10 MeV/u stage.

5. REPORT ON N_TOF

The committee congratulated n_TOF on the presented highlights and welcomed the satisfactory number of protons delivered in 2010 and planned for 2011.
Concerning the new experimental area (EAR2), the committee asked the n_TOF collaboration to prepare a more detailed report with technical details and the status of other facilities of this kind, and encouraged the collaboration to present it at the July INTC meeting. The INTC was informed that the n_TOF collaboration is already working on more simulations and radioprotection issues. At the moment CERN commitment is not known. The construction should last 8-10 months and it could take place during the 2013 shutdown. In principle there should be no problem with running both beamlines in parallel and at the same time. The final proposal will be presented to the n_TOF collaboration at the end of 2011 and then to the INTC before being presented to the CERN Research Board. It was also agreed that a written report on EAR2 (without financial details) will be prepared and distributed among the INTC members before the July meeting.

6. DISCUSSION ON THE OPEN SESSION AND OTHER DOCUMENTS

The proposals presented during the open session and letters of intent were then discussed:

CERN-INTC-2011-002, INTC-P-290, Single-particle states in \(^{81}\)Zn populated in single-neutron transfer reaction \(^{80}\)Zn(d,p)

Encouraged by the preliminary results from an earlier T-REX + MINIBALL experiment for \(^{79}\)Zn, a similar experiment is now proposed to probe the lowest single-neutron states in \(^{81}\)Zn. The physics case is strong and it has a discovery potential, but there are several factors which make the experiment very difficult: the need for a thick target and the corresponding difficulties in resolving the states of interest together with the low yields expected. The committee endorsed the physics case but did not recommend any shifts until it has been demonstrated that there is enough intensity of \(^{80}\)Zn (production via new neutron converter target) and until a detailed analysis of \(^{78}\)Zn experiment is available. It was also pointed out that knowledge of the ground-state spin of \(^{81}\)Zn would be an important aid to the success of the experiment and that such information is expected from INTC-P-300.

CERN-INTC-2011-005, INTC-P-291, Shape coexistence in the lightest Tl isotopes studied by laser spectroscopy

It is proposed to determine differences in the charge radii of proton-rich Tl isotopes using in-source laser spectroscopy and alpha-detection. In addition, the results would support the ISOLDE beta-delayed fission programme. The importance of a precise measurement of the mass and, hence of the \(Q_{EC}\), was not clear to the Committee. Therefore 13 shifts were recommended for approval by the Research Board, excluding the time requested for the mass measurement.

CERN-INTC-2011-007, INTC-P-292, Resonance proton scattering of \(^{22}\)Mg and \(^{21}\)Na

The proposal aims at studying resonant proton scattering relevant for the nucleosynthesis of proton-rich nuclides. The general physics motivation was considered to be interesting, however the proposal would have presented a better case if more experimental details had been provided. The committee suggested that the collaboration begins with the \(^{21}\)Na beam study and consequently recommended for approval by the Research Board 15 shifts.
CERN-INTC-2011-009, INTC-P-293, Study of the odd-A, high-spin isomers in neutron-deficient trans-lead nuclei with ISOLTRAP

It is proposed to study the excitation energy of the $13/2^+$ isomeric state in $^{193,195,197}$Po isotopes by combining mass measurements and trap-assisted decay-spectroscopic measurements with ISOLTRAP. In this way, the excitation energy of the corresponding $13/2^+$ states in Pb, Rn and Ra isotopes connected by the known alpha-decays can be also determined. The topic and the technique were found interesting, although the importance of $13/2^+$ state in shape coexistence given as motivation for the studies was somehow overstated. The committee **recommended 21 shifts** for approval by the Research Board.

CERN-INTC-2011-010, INTC-P-294, Diffusion in Intermetallic Compounds Studied Using Short-Lived Radioisotopes

The proposed project will study a classical and open problem concerning the diffusion mechanism. A novel technique will be used which makes it especially interesting. The proposal was found to be very clear and **10 shifts** were **recommended** for approval by the Research Board.

CERN-INTC-2011-011, INTC-P-295, Radioactive probe studies of coordination modes of heavy metal ions from natural waters to functionalized magnetic nanoparticles

Following a successful LOI, a unique and original method to clean heavy-metal contamination from water was presented, which can open up a new field of applications. The results can be promising, however high statistics might be necessary. The committee decided to **recommend 16 shifts** for approval by the Research Board.

CERN-INTC-2011-012, INTC-P-296, Coulomb excitation of $^{116}$Te and $^{118}$Te: a study of collectivity above the Z = 50 shell gap

The proposal, a resubmission of an earlier proposal, aims at investigating the collectivity of low-energy excitations in $^{116}$Te and $^{118}$Te via Coulomb excitation. The committee found that it is more interesting to measure more precisely the B(E2) behaviour in $^{118}$Te, while the B(E2) of $^{116}$Te is expect to follow the established trend. TAC noted in the written report that some beam development is required. **6 shifts** for studies on $^{118}$Te were thus **recommended** for approval by the Research Board.

CERN-INTC-2011-013, INTC-P-297, Determination of the Magnetic Moment of $^{140}$Pr

The measurement should contribute to the understanding of the modulated electron capture decay observed in hydrogen-like ions in a storage ring. The experiment will take place at the COLLAPS setup and the use of GPS was requested: the production rate and beam purity should be sufficient to perform the measurements, but the collaboration is encouraged to make use of the ISCOOL in bunched mode to increase the sensitivity. **9 shifts** were **recommended** for approval by the Research Board.

CERN-INTC-2011-015, INTC-P-299, Extending and Refining the Mass Surface around $^{208}$Pb by High-Precision Penning-Trap Mass Spectrometry with ISOLTRAP

This proposal contained a very ambitious programme to measure precisely masses of a broad range of exotic nuclei in order to study nuclear shapes and structure, and the r-process for nucleosynthesis. While the Committee recognised that the group has an excellent track record with many high-profile publications, the proposal was nevertheless felt to be too wide-
ranging and not well enough focused, especially in light of the total amount of beamtime requested. The Committee also noted that it would be very unlikely that most or all the measurements proposed could be completed before the long shutdown starting in November next year. Therefore, the Committee decided to support in the first instance the measurement of masses in the Fr, At and Au isotopes for r-process physics, octupole deformation and shell structure studies. The Committee encouraged the group to submit more targeted proposals in future. At the same time, the group was encouraged to make use of beamtime which other groups cannot use. The Committee recommended that 34 shifts be approved by the Research Board.

CERN-INTC-2011-016, INTC-P-300, Shell structure and level migrations in zinc studied using collinear laser spectroscopy

The proposal has the potential to provide much information on the structure of the Zn isotopes. In particular, the nuclear-structure motivation for the neutron rich isotopes was considered strong. The isotope-shift measurements will also allow the atomic-structure calculations in this region to be verified. In addition, the ground-state spin of $^{81}$Zn will be of critical input for the measurements proposed by INTC-P-290. At the same time, the shift estimate was found to be rather poorly justified and the motivation for the studies on the proton-rich side was weak. The committee recommended for approval by the Research Board all 21 shifts, but urged the group to investigate the neutron-rich isotopes first.

CERN-INTC-2011-018, INTC-P-301, Study of $^{13}$Be through isobaric analog resonances in the Maya active target

A new method using an active target is proposed to address a long-standing question on the nature of the ground-state of $^{13}$Be. The measurement is very interesting but challenging, also from theoretical point of view. The TAC noted that the required yield can be difficult to maintain during the requested beamtime. It was therefore decided to recommend for approval of the Research Board 30 shifts, which correspond to an average lifetime of a UC$_x$ target at ISOLDE.

CERN-INTC-2011-020, INTC-P-302, Simultaneous spectroscopy of $\gamma$ rays and conversion electrons: Systematic study of E0 transitions and intruder states in close vicinity of mid-shell point in odd-Au isotopes

The proposal aims at completing the scarce systematic information about the energy behaviour of various proton-intruder states in the vicinity of the N=104 midshell. The physics case was considered interesting and shift request justified. The committee recommended 12 shifts for approval by the Research Board.

CERN-INTC-2011-021, INTC-P-303, A=225 implantation for $^{221}$Fr source for TRIUMF atom trap

The proposal requests preparation of samples to be used later in a parity-violation experiment at TRIUMF, where the physics case for these studies had been already approved by TRIUMF Scientific Committee. The implantation itself should not pose any problems, but impurities due to bad vacuum, the efficiency of extracting $^{221}$Fr atoms, and transport-related safety issues were not detailed enough. The committee endorsed the scientific case, but raised concerns that the collaboration does not formally include CERN. 6 shifts were recommended for approval by the Research Board, but before the implantations take place.
the group is asked, in close collaboration with CERN responsible staff, to clarify and ensure the sample transport constraints.

**CERN-INTC-2011-003, INTC-P-251-ADD-1, The role of In in III-nitride ternary semiconductors**

The addendum proposes to repeat and perform new studies on the role of In in semiconductors by using the Perturbed Angular Correlation technique (beta-gamma and gamma-gamma). The method is straightforward and should not pose any problems while providing a unique insight into the problem. It was also recommended to complement the studies with the use of other techniques. 12 shifts were thus **recommended** for approval by the Research Board.

**CERN-INTC-2011-004, INTC-P-199-ADD-1, Shape effects along the Z=82 line: study of the beta decay of $^{186,188}$Pb**

Measurements on Pb isotopes using the total absorption spectrometer are proposed. The idea was found certainly interesting, but it was not clear that conclusions about the nuclear shape will be straightforward, as shown from the latest $^{192}$Pb results. The availability of a better theoretical description of the observations is thus crucial. $^{188}$Pb might be also difficult to provide in the required intensity and purity. Therefore, the committee **recommended** for approval by the Research Board 5 shifts to finalise the studies of $^{188}$Pb.

**CERN-INTC-2011-006, INTC-P-235-ADD-2, Detailed beta-DF studies of $^{202}$Fr and a search for $\beta$DF of $^{204}$Fr**

This addendum proposes to extend the very successful studies of beta-delayed fission of Hg isotopes to the Fr chain. The proposal was well written and motivated and the measurements are feasible. The study will also be relevant for motivating a better theoretical description of fission. The committee decided to **recommend 13 shifts** for approval by the Research Board.

**CERN-INTC-2011-008, INTC-P-244-ADD1, Measurements of octupole collectivity in odd-mass Rn and Ra nuclei using Coulomb excitation**

The proposal plans to extend the studies of octupole collectivity in even-mass Rn and Ra nuclei to odd-mass isotopes. This addendum has an exploratory character that mirrors the objectives in the LOI for HIE-ISOLDE submitted by the collaboration in July 2010. The physics was considered interesting by the Committee – especially for the understanding of octupole collectivity – and unique for ISOLDE, although the impact on EDM-search limits was not felt to be very clear. 6 shifts for exploratory studies on $^{221}$Rn were thus **recommended** for approval by the Research Board.

**CERN-INTC-2011-019, INTC-I-133, Storage ring facility at HIE-ISOLDE**

The LOI for HIE-ISOLDE was found very interesting and, if successful, it would lead to the first storage ring at an ISOL-type facility. The planned experimental programme is diverse and offers unique opportunities for studies in nuclear structure and nuclear astrophysics. The feasibility of some of the proposed studies needs to be further investigated, as well as the space, cost and manpower required for installing and running the device. The committee **endorsed** the scientific case presented in the LOI and encouraged the proponents to submit a Technical Design Report for the move and installation of the TSR at ISOLDE at their earliest convenience.
CERN-INTC-2011-001, INTC-I-131, *PAC study of the static and dynamic aspects of an atom inside a fullerene cage*

The LOI aims at investigating the behaviour of atoms implanted into a fullerene but looking at their PAC spectra. The case was found interesting, although questions were raised whether the ISOLDE yield is sufficient to see a strong signal and whether the beam will be efficiently stopped in the thin film. The LOI was **endorsed**, but the group is asked to verify the ion-range calculations in carbon.

CERN-INTC-2011-017, INTC-I-132, *Radioactive Local Probing and Doping on Graphene*

The first tests towards a large and ambitious programme on a very dynamic topic are proposed, where the behaviour of pure isotopes and dopant elements will be studies with PAC technique at the graphene surface. Any first results in this area will be valuable, therefore the LOI was **endorsed**.

CERN-INTC-2011-022, INTC-I-134, *Perturbed Angular Correlation Spectroscopy for structural and dynamic studies of artificial DNA nanostructures*

PAC studies on Hg binding to artificial DNA nanostructures are proposed. It was not however clear what knowledge can be gained from these studies and whether the DNA structures will remain undamaged on their journey from Korea. The LOI thus obtained **endorsement** for exploratory studies.

Out of the 388 radioactive beam shifts requested to the INTC a total of 245 have been recommended for approval by the Research Board.

7. **A.O.B.**

For the July 2011 INTC meeting proposals for n_TOF, LOIs for ISOLDE and HIE-ISOLDE will be accepted. However, due to a large number of already accepted shifts for ISOLDE experiments, no new ISOLDE proposals will be accepted, except for documents postponed from the February meeting. Instead, several reports on recent ISOLDE experimental programmes will be requested.

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