

# Minutes of the 6<sup>th</sup> Meeting of the COSY Beam Time Advisory Committee (CBAC)

June 26 and 27, 2017

Location: Forschungszentrum Jülich GmbH, Institut für Kernphysik, 52428 Jülich, Germany

## Participants:

### *CBAC members:*

Aulenbacher, Kurt Univ. Mainz, DE  
Chao, Alexander W. SLAC, US (excused)  
Kester, Oliver TRIUMF, CA  
Schmidt, Christian Joachim GSI, DE  
Steffens, Erhard Univ. Erlangen-Nürnberg, DE (chair)  
Trubnikov, Grigory V. JINR Dubna, RU (excused)  
Weber, Marc KIT, DE

### *CBAC Scientific Secretary:*

Frank Goldenbaum (IKP-1)

### *IKP:*

Ulf-G. Meißner (IKP-3 Director) (excused)  
Dieter Prasuhn (IKP-4) (excused)  
Ralf Gebel (IKP-4 Acting Director)  
James Ritman (IKP-1 Director, IKP Managing Director)  
Hans Ströher (IKP-2 Director, Scientific Coordinator COSY)

*Board of Directors FZJ:* Sebastian Schmidt

## 1. General remarks

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The 6<sup>th</sup> CBAC session took place on June 26-27<sup>th</sup> in the Forschungszentrum Jülich GmbH, Institut für Kernphysik in Jülich, Germany. The beam time requests of the individual groups were presented on Monday in the Open Session of the CBAC#6 meeting (for the programme and the list of applications see the Addendum).

Closed Sessions of the CBAC members were on Monday morning 9:00-9:30, on Monday evening 17:00-19:30 and on Tuesday morning until 12:10.

The Closed Session on Monday morning was opened by Hans Ströher (Scientific Coordinator COSY) welcoming the participants (see list above). Grigory Trubnikov, Alex Chao (CBAC members), Ulf-G. Meißner (IKP-3 Director) and Sebastian Schmidt (Board of Directors FZJ) are excused for not being able to participate the CBAC session on Monday. Hans Ströher addressed the terms of membership of the CBAC advisory members. Alex Chao, Erhard Steffens and Grigory Trubnikov will discontinue their highly considered activities for CBAC. The confirmation of readiness of the other CBAC members to continue the next term of their committee work was highly appreciated. Words of thanks were expressed by Hans Ströher for the committee work of all CBAC members. At the end of the open session on Tuesday, Sebastian Schmidt (Board of Directors FZJ) addressed words of thanks in particular for the exiting CBAC members Grigory Trubnikov, Alex Chao (both excused for not being present) and showed his large appreciation for all the valuable activities Erhard Steffens had contributed as the chair of the CBAC committee during the past years.

A short status of the current IKP situation in the context of the ongoing strategy process of the research center Jülich was given. The FZ-Jülich management aims at focussing on essentially three

main topics – Energy, Information, Bio-economy. For the IKP’s future different scenarios were discussed on the supervisory board session which took place in Mai; one of the scenarios being the organisational linkage to GSI/FAIR for the FAIR activities PANDA and HESR and the continuation of the “non-FAIR” activities within a to be established Helmholtz Institute (i.e. with RWTH-Aachen).

It was announced by H. Ströher that the mid-term POF-3 evaluation which is particularly important for the future of the current IKP programs, will take place on December 12-15, 2017

In the Open Session, Ralf Gebel presented the status of COSY in 2017, the current beam time schedule until September 2017, main reasons for the essential interrupts, in particular on the failure of the extraction septum and its implications as well as an outlook on the operation of COSY. For the first time, results of a survey performed by a surveyor’s office were presented, showing the geometrical settlement of the COSY ring and external beam areas relative to the cyclotron as function of time. These settlements amount up to 16 mm for some parts of the ring. A realignment of COSY components may have to be considered after a 3<sup>rd</sup> survey for re-confirmation has been done.

The twelve proposals submitted to CBAC#6 ask in total for approximately 21 weeks within the 2<sup>nd</sup> half of 2017 (Q3+4/17) and Q1/18. The proposed experiments comprise three proposals on detector tests for FAIR (incl. one re-newed for a canceled beam time), two on neutron production, four on machine studies for COSY and FAIR and three on preparations of the measurement of EDM’s by JEDI. As a back log of the beam times recommended in previous CBAC sessions, the following proposals were not yet scheduled: (D001.4-MVD, D004.4-CBM, D008-Eta’, D009-Cluster jet Target, and A009-Sib.Snake).

An overview of all the applications to CBAC#6 is given as a table in the Addendum. The electronic versions of all proposals and reports as well as the pdf files of all contributions presented in the open session of CBAC#6 are located on the web page

<http://www.ikp.fz-juelich.de/CBAC/documents/cbac06.html>

## 2. Summary of the discussion and recommendations

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**2a) Procedure** The system of rating was discussed during the closed sessions, but basically taken over from CBAC#5 and shown here again for completeness. As it has been stressed by the IKP Scientific coordinator, COSY is no longer a User Facility since the start of the POF-3 period in 2015 which has resulted in a shortening of the available beam time as projects by external users were officially no longer part of the COSY program. Up to now and as a service to previous users, beam time has been granted to the extent that the IKP program was untouched.

The projects studied at the COSY accelerator complex can be classified into the following groups:

**Table 1**  
*Classification of the COSY applications with respect to programs*

<b>1</b>	<b>IKP POF-3</b>	EDM, PANDA, HESR, (PAX, Sib. Snake)
<b>2</b>	<b>IKP non-POF-3</b>	TRIC
<b>3</b>	<b>Non-IKP POF-3</b>	CBM
<b>4</b>	<b>Non-IKP non-POF-3</b>	INT, Tb-cross sections, HBS, $\eta'$

In the discussion, the committee came to the conclusion that in future the following categories should be used, modified with respect to earlier CBAC sessions. Items (i) – *Feasibility* - and (ii) – *Readiness* - are basically unchanged. In view of the short time of about one year to the final POF-3 scientific

review, the priorities expressed in category (iii) – *Importance* - had to be modified in order to give high priority to the POF-3 goals.

As before, the proposals were presented in the open session and questions were posed to the proponents from the audience and by CBAC members. Then a comparative discussion took place in the closed session. In particular, those proposals were scrutinized with special emphasis on

- (i) **Feasibility** Here the committee judges with its expert’s knowledge and other advice on the feasibility of the proposed test or measurement. Other assessments, like from a POF review or accepted proposals may enter; also boundary conditions imposed by the facility have to be considered.
- (ii) **Readiness** Assessment of possible risks that elements required for the test are not available in time. It should be noted that CBAC as external group cannot make a complete assessment of possible delays. The proponents are asked to give in their application a detailed account of the readiness of the instrumental requisites necessary for the requested test.
- (iii) **Importance** IKP-based projects of group 1 and 2 (see Table 1), and non-IKP but POF-3 projects from another Helmholtz center (group 3) should get the highest rating **A** (should be done), or **B** (nice to have); group-4 projects from external users should be rated **C** (lower priority). Due to the more favorable situation of the IKP programs, this rule has been relaxed and other view points could be taken into account.

All these considerations lead to a Rating A, B, C as explained above. As in the previous recommendations, there is no total rating given, because the committee felt that the set of the three partial ratings represents in the best way the message the committee wants to convey to the Laboratory. - The result of the discussion is summarized in Table 2, shown below.

## 2b) Summary of the Recommendations

Projects presented in the Open Session on Monday (see Sec.1 and table in the addendum) are listed in Table 2. In addition, two projects are included: a status reports given orally (D2) together with a request, as well as a written status reports of a ‘delayed proposal’ contributed to the meeting (D1). For these projects, the relevant figures are listed in the table as well.

**Table 2:** Summary of Requests (for details see table in the addendum) and Recommendations of CBAC#6 for the 2<sup>nd</sup> half of 2017 (Q3 & 4) and the 1<sup>st</sup> quarter Q1 of 2018. Items are: Experiment, number of weeks requested, and the three partial ratings.

<i>Experiment</i>	<i>Request</i>	<i>Feasibility</i>	<i>Readiness</i>	<i>Importance</i>
<i>D1 MVD</i>	<i>1 week Q4 (+1 week Q1/18)</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>D2 STT</i>	<i>2 weeks Q1/18</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>D4 CBM</i>	<i>1 week Q4</i>	<i>A</i>	<i>A</i>	<i>A</i>
	<i>1 week Q1/18 el.l.</i>	<i>A</i>	<i>B</i>	<i>A</i>
	<i>1 week Q1/18 disp.</i>	<i>A</i>	<i>A</i>	<i>A</i>

<i>A1 StochCool</i>	<i>1 week</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>A2 Ecool</i>	<i>3 days Q3/4</i>	<i>A</i>	<i>B</i>	<i>A</i>
	<i>2 weeks Q1/18</i>	<i>A</i>	<i>B</i>	<i>A</i>
<i>A10.2 HBS</i>	<i>1 week Q1/18</i>	<i>A</i>	<i>B</i>	<i>A</i>
<i>A10.3 HBS</i>	<i>1 week Q3/4</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>A11 SpaceCh</i>	<i>3 days el.lens/MD (Disp.funct).</i>	<i>A</i>	<i>A</i>	<i>A</i>
		<i>A</i>	<i>C</i>	<i>A</i>
<i>A12 Slow Extr</i>	<i>1 week Q3/4</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>E2 JEDI Polar.</i>	<i>1 week Q4</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>E4 JEDI p-Data</i>	<i>2 weeks Q1/18</i>	<i>A</i>	<i>A</i>	<i>A</i>
<i>E5 JEDI RF-WF</i>	<i>1 week Q3</i>	<i>A</i>	<i>A</i>	<i>A</i>
	<i>3 weeks Q4</i>	<i>A</i>	<i>B</i>	<i>A</i>

## 2c) Short reports and recommendations on individual proposals

### Proposal D001.5      *Detector Tests for the PANDA Microvertex-Detector*

The PANDA-MVD developments are in a state that full system tests with the detectors and the complete data driven readout chain may be performed. In view of the lengthy ASIC development cycles, particular urgency is seen in the evaluation of system performance of both, the Pixel-readout ASIC ToPix and the entirely novel strip readout ASIC PASTA. Availability of these devices clearly defines the critical path for the MVD. With the previous beam-times first scheduled to Q2/2016 but cancelled and rescheduled repeatedly due to technical issues at COSY this necessity prevails. We recommend to test the newest device PASTA in its performance first and re-apply for the study of the ToPix chain in CBAC 7. The proposal is fully supported, the amount and allocation of beam time fully justified.

*Ratings:*      Feasibility *A*                      Readiness *A*                      Importance *A*

*Recommendation:* 1 week in Q4, plus 1 additional week, pending on results of Q4 run. A merged beam-time together with the CBM-FAIR detector tests envisioned should be considered.

### Proposal D002.2      *Detector Tests for the PANDA STT Detector*

The PANDA STT will, as a straw tracker, serve PANDA as the central tracking system together with the silicon based MVD. The working group has long standing expertise in this well-established straw

drift detector technology and on systems based upon it. The detector system has now matured to receive the final pre-series evaluation as important milestone towards production. This in-beam evaluation will be realized with a 400 straw-module comprising roughly 10% of the final tracker. The requested two weeks beam-time is justified for a thorough evaluation of the PANDA central tracker with a particular focus to the evaluation of dE/dx resolution and performance concerning tracking and PID. It is indeed preferable for any tracking detector development and essential for a final qualification that the system be evaluated on a real beam in as similar a situation to the final use case as possible.

Additional to the final evaluation prior to straw module serial production, two different and fully developed readout systems will be qualified and studied in detail. These studies as integral part of the demanded beam-time will be the basis to the PANDA collaboration for a final decision on which readout system to employ. The evaluation will be realized in parallel and will yield a direct comparison of the performance of either option.

The PANDA STT collaboration is rated as clearly ready to exploit the requested beam-time, the proposal being definitively feasible. The importance as key production readiness criterion for the STT is acknowledged.

*Ratings:*            Feasibility A                      Readiness A                      Importance A

*Recommendation:* Two weeks in Q1/18

#### Proposal D004.5            *CBM Detector and Electronics Tests at COSY*

The CBM collaboration requests one week of beam tests in October 2017 and two further beam tests in Q1 of 2018.

These tests are partially meant to replace tests cancelled in May 2017 due to the septum failure. The tests include the tests of the DiRICH readout electronics and the timing measurement with the diamond detector system. The DiRICH test serves many purposes and an advanced system is ready for testing. Also the diamond t0 system with its notable FPGA-based precision TDC, which will be widely used for several FAIR projects including HADES, the CBM RICH, PANDA and elsewhere, is ready for testing. The advisory committee appreciates the synergies of the joint testing with the HADES Mini Drift Chamber (MDC). A week of testing is adequate.

*Ratings:*            Feasibility A            Readiness A            Importance A

*Recommendation:* 1 week Q4/17

Detailed radiation-hardness studies were presented from the February 2017 high-intensity beam tests at COSY. The tests very conclusively revealed remaining weaknesses in the digital and analog blocks of the ASIC. The requested beam time of the next STS-XYTER version and several other devices (custom LDOs, FPGA electronics, etc.) is thus mandatory and fully endorsed by CBAC. The committee would like to note that the schedule for obtaining this chip version is tight.

Also the testing of first STS modules with the aforementioned STS-XYTER version, the latest micro-cables and front-end board (FEB) in a consequent test is crucial. The committee would like to note that the same schedule constraints as above apply. These tests would be even more valuable if the FLIB and FLES digital electronics could be exercised in a full system test as well. The requested one week of testing for each of the tests in Q1/2018 is adequate.

*Ratings:*    Feasibility A            Readiness B            Importance A

*Recommendation:* 2x 1 week in Q1/18, subject to availability of ASIC

Proposal A001.5      *Stochastic Cooling: Commissioning of new HESR stochastic cooling tanks*

Stochastic cooling is an indispensable instrumentation needed for the operation of HESR at FAIR. The stochastic cooling group at COSY has made impressive progress with respect to this task. The HESR kicker tank was installed in the summer shut down 2016 and has now been tested in a first beam time in I/2017. A large fraction of the system components has been tested and prove to work within the expectation. This holds in particular for the RF-amplifiers. A measurement of the transfer function of the system has revealed that its bandwidth was insufficient which was attributed to a misoriented kicker plate. The behavior was reproduced by simulation.

Nevertheless, the operation of the stochastic cooling system was demonstrated albeit with lower bandwidth resulting in less efficient cooling. After rotation of the kicker component during the shutdown in April 2017, open loop measurements show an improvement.

The group asks for two weeks of beam time in II/2017 in order to obtain results from the full system including the new power amplifiers and a programmable delay needed to adapt for variable beam energies. Cooling in three dimensions is expected. For high energy applications usage of the low latency hollow core fibers for signal transmission will be tested.

CBAC is impressed by the progress obtained. Beam time for the study of the stochastic cooling system with its increased complexity is now timely and necessary.

*Rating*              Feasibility A              Readiness A              Importance A

*Recommendation:* 2 weeks in II/2017, (1 week thereof for machine development & set up)

Proposals A002.5      *Electron Cooling*

The 2 MeV electron cooler at COSY is a unique device as it represents the highest-energy magnetized beam available.

Unfortunately, the scheduled beam time in spring 2017 had to be cancelled due to a failure of the power supply for the cascade transformer. The failure has been repaired and the power supply is now under supervision by the COSY power supply group. The cooler is now fully operational again and achieves voltages of 1.5 MV with non-negligible current.

In place of the 2 MeV device, the COSY standard cooler was employed which allowed tune scans in conjunction with life time measurements and different aspect ratios of electron beam/proton beam. The expansion of the e-beam leads to reduced beam losses. The tune scans vs lifetime help to prepare for the postponed runs with the high energy cooler.

The existing collaboration has been widened by T. Katayama from Nihon university, who gives theoretical support. First simulations have been made which may help to better understand the results obtained, which have not been interpreted in a unique manner so far.

The proponents ask for a compensation in 2018 of the lost beam time plus additional three days of commissioning for optimization of the COSY model in order to include the operation of the 2 MeV cooler. The long run up time for the experiment until early 2018 will also enhance the probability that the PANDA cluster target becomes available, thus enabling studies with strong beam-target interaction.

The CBAC endorses these studies at this unique machine. We express our hope that with the implementation of the new set up procedures a conclusive interpretation of relativistic magnetized cooling in the hitherto unexplored energy regime will soon become available. In particular, a statement

of the achievable energy definition of the antiproton beam at HESR could become of particular importance for the physics program at PANDA.

*Ratings:*            Feasibility A            Readiness B            Importance A

*Recommendation:* 2 weeks in I/2018, three days for improvement of the COSY model in II/2017, possibly in combination with MD.

*Proposals A010.2*            *HBS - Thermal and cold neutron production process via Be-Target, thermal D2O MRP and CH4, IH2 cryogenic moderators*

The HBS project aims at the development of compact, accelerator-based cold directed, high-brilliance neutron sources. These sources may complement high-power sources like ESS for the local supply e.g. of universities with neutron beams. At present, the extraction from the moderator's neutron flux maximum by a guide line is being studied by a Jülich-Aachen-Dresden collaboration at the AKR-2 research reactor at TU Dresden. High brilliance requires the application of close-to-one dimensional 'finger' cryogenic moderators developed at JCNS. It is proposed to continue the AKR studies at the Be-target set-up with thermal D<sub>2</sub>O moderator of experiment A010.3. The produced n-beam will be analyzed using the Time-of-Flight AKR diffractometer (TOAD). Two different sets of detectors will measure energy spectra via TOF and diffraction in parallel.

For lower energies, different cryogenic moderators are envisaged. A cold finger moderator operated with liquid hydrogen and a mixing cryostat allows for the setting of the ortho-para ratio in order to vary the shape of the neutron spectra at low energies. After installation of the TOAD set-up, these and other techniques will be explored at COSY. For a first test, 5 days of beam time are requested for early 2018.

*Ratings:*            Feasibility A            Readiness B            Importance A

*Recommendation:* The committee fully supports this innovative project. The requested beam time should be granted according to the availability of the TOAD set-up.

*Proposals A010.3*            *HBS - Comparison of neutron fluxes produced by proton and deuteron beams on a thick Be target*

This request is a continuation of (p,n) neutron flux measurements at low energies, for which one week of beam time is already granted in 08/17. In a previous run, the new method for determining the flux of thermal neutrons produced by the Be-target plus Polyethylen moderator system via prompt  $\gamma$ 's has been confirmed. The experiment is analyzed based on GEANT-4 simulations.

The present request of 1 week in 2017 is devoted to the corresponding measurement for (d,n) neutrons under otherwise identical conditions. The CBAC notes with interest that an important improvement will be made available by the machine group for both runs, namely a separate beam line for ions directly after the Cyclotron leading to the Big Karl area. In this way, an independent generation of low-energy beams without cooler ring is enabled. The C-Degrader necessary to reduce the energy in 10 MeV steps is located within the beam line. This allows for a cleaning-up of the spectrum of ions directed towards the Be production target, which may result in a better definition of the experimental parameters and a lower background level.

*Ratings:*            Feasibility A            Readiness A            Importance A

*Recommendation:* 1 week in II/2017. The committee fully supports these studies of p and d induced neutron yields with the improved set-up.

Proposal A011      *Space Charge Effects and its Compensation*

The space charge limit in synchrotrons is a very active field of research due to the demand of high beam intensities by projects like FAIR. In order to cope with space charge effects, electron lenses have been gaining interest and are even seen as a potential solution to increase the space charge limit in booster synchrotrons like the SIS18. Simulation results of the proponent show that for a small number of electron lens the localized nonlinear kick produced by the electron lens can add additional resonances and instabilities due to the nonlinear electron beam profile.

The proposal for one week of beam time is to explore the nonlinear stopbands that are expected to arise from using the electron coolers of COSY as lenses and to explore space charge effects on the dispersion function at high intensities. The e-cooler tests are a continuation of the first test done at SIS18 in 2016, and should be done as proposed within a machine development. The dispersion function evaluation does require sophisticated beam instrumentation that need to be defined and prepared at COSY. Therefore, the committee recommends to define and ensure, together with the COSY machine coordinator, the appropriate beam instrumentation for the dispersion function studies prior to any beam test.

*Rating* Feasibility A                      Readiness A (e-lens)                                      Importance A

*Rating* Feasibility A                      Readiness C (dispersion function meas.)                                      Importance A

*Recommendation:* 3 days in MD for e-lens

Proposal A012      *Slow extraction studies at COSY*

The aim of the proposal is to develop a method which will improve the homogeneity of the extracted beam at SIS18 during a spill of about 3 s in length. At present the spill exhibits spikes due to the ripple of the driving current of the quadrupole lens used for resonant extraction. This has been confirmed in a recent SIS18 campaign showing the adverse effect of an artificial ripple added to the quad current. It is proposed to add a weak stochastic excitation in order to suppress the influence of the ripple of the quad field. At COSY, both resonant and stochastic extraction is possible, ideal for the study of SIS18 extraction, which has been discussed at the 2016 workshop on Slow Extraction by H. Stockhorst. The results are a good basis for the present request of 1 week of beam time, preferentially in II/2017.

*Ratings:*                      Feasibility A                                      Readiness A                                      Importance A

*Recommendation:* 1 week in II/2017. The committee proposes to involve H. Stockhorst into these studies.

Proposal E002.4      *JEDI: Towards EDM Polarimetry*

The JEDI proposes a week of beam tests in order to test crucial hardware components, the target station with collimator, the module support disk, the crystals with SiPMTs, the high-precision SiPMT voltage supply, the front-end high-speed, high-resolution flash ADCs and DAQ system. Further system elements are the plastic scintillators for the dE measurement and the tagging GEM for surviving deuterons.

The tests will probe a very advanced and almost final system of 48 YSO-SiPM modules, streamline the DAQ and perform a total cross section measurement of the reaction  $d-C \rightarrow X$ . The team presented convincing measurements from their previous campaign. The readiness of the preparations is high. The tagging GEM Hard and Soft-Ware should be available by the end of the year, which might be tight for the requested beam time.

*Ratings:*                      Feasibility A                                      Readiness A (B for GEM)                                      Importance A

*Recommendation:* 1 week in Q4



Proposal E004.2

*JEDI: EDM Polarimeter Data Base for Protons*

This request is part of the program to prepare EDM storage ring measurements of light ions (p, d), for which precise Polarimetry is mandatory. Following the successful deuteron run completed in 2016, p-Carbon data will be measured in the energy range 160 – 250 MeV using the modified WASA Forward Detector. Emphasis has to be on the choice of a reliable online polarimeter, and the careful tuning of depolarizing resonances in COSY. In addition, runs with a CH<sub>2</sub> target are performed in order to observe p-p in parallel to p-C scattering for an independent calibration of the elastic cross section and analyzing power. Geant4 simulations are employed to optimize the thickness of the Carbon target for maximum detection efficiency, and to minimize geometry-related systematic errors. The committee fully endorses the intention to complete the EDM polarimeter data base by measuring the proton data.

*Ratings:*            Feasibility A            Readiness A            Importance A

*Recommendation:* 2 weeks of beam time in I/2018

Proposal E005.3

*JEDI: First exploratory deuteron EDM experiments with the waveguide RF Wien Filter*

The RF Wien Filter developed by the JEDI collaboration is a very sophisticated instrument to carry out EDM experiments. The system essentially employs four feedback loops to control the phase locking of the spin precision in COSY with the Wien Filter RF frequency, to exactly balance of the fields in the Wien filter and ensure the correct phase setting between the fields and to control the position of the beam on axis in the Wien Filter. The committee recognizes that the operation of these feedback loops is demanding and needs beam time for exploration.

The commissioning of the RF Wien filter that will be carried out in two 3-weeks blocks of beam time that were partly granted in June 17 (CBAC#5), see below (i). The requested beam time of two times three weeks is to explore the full system with all feedback loops, including the implementation of the spin tune feedback from the WASA detector. The committee notifies that tuning of such a complex system with several feedback loops needs ample time. The tests have been very well prepared over the past years. Now the proponents are in a position to venture this decisive step trying how far one can get in EDM sensitivity and systematic error.

Taking into account the central role of the E5-experiment for the success of the EDM program, the committee supports strongly the - partly granted – block of beam time in Q4/17 for a first in-depth attempt to tune the full system to the expected sensitivity. For the second block requested in Q1/18, a short progress report should be given at CBAC#7, followed by a final recommendation.

*Rating* (for the add. week in II/17)            Feasibility A            Readiness A            Importance A

*Recommendation:* (i) 1 week in addition to the already granted 2 weeks (CBAC#5) in II/2017, adding up to a 3-weeks block in Q4/17; (ii) 3 weeks for the full system in Q1/18: decision moved to CBAC#7.

### 3. Conclusions

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The COSY facility is a testing ground for FAIR and for future precision experiments and, with lower priority, for other applications. Despite the strong signals by the FZJ management that the operation of COSY – a unique accelerator facility - will come to an end soon, the number and importance of FZJ-internal requests, like A10.2, A10.3 and D10, remains at a high level, indicating the importance of Nuclear physics for modern Sciences, e.g. Life Science and Basic Sciences.

*Twelve* new requests for beam time at COSY for the period Q3+4/2017 and Q1/2018 have been

presented to CBAC#6 (number in brackets: CBAC#5):

- *three* (2) on detector tests for FAIR (D1, D2, D4),
- *two* (3) on irradiation and isotope production (A10.2, A10.3),
- *four* (4) on machine studies for HESR (A1, A2, A11, A12),
- *three* (2) on preparations of the JEDI experiments (E2, E4, E5),

Among those, one request recommended by CBAC#5 has been confirmed (D1) and partly modified.

A total of about 21 weeks of beam time were recommended by CBAC#6 for scheduling in 2017/18. The main portion is due to GSI/FAIR, namely three detector applications (D1, D2 and D4) plus the machine-related experiments A1, A2 (HESR), and A11 and A12 (SIS18). Two runs in the course of the HBS project (JCNS), A10.2 and A10.3, were approved by the committee. For the JEDI collaboration, two polarimetry runs and a series of RF-Wien-Filter tests have been recommended for scheduling, which are time-critical for the EDM precursor experiment.

The beam time recommendations for the period Q2–4/2018 will be subject of a detailed evaluation by CBAC#7 mid December 2017, i.e. well in advance of the start of the next period in Q2/2018.

#### **4. Comment on the future of the Institute of Nuclear Physics (IKP)**

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The Committee in its present form has expressed during the last few years its doubts about the wisdom of the FZJ Strategy process and the adverse consequences for the IKP. As the term of three CBAC members (A. Chao, E. Steffens and G. Trubnikov) comes to an end, the committee takes the opportunity to express its hope that the positive signs from the FZJ Supervisory Board in its recent meeting to continue all IKP programs in one or the other form become reality. The relevance of IKP at FZJ for FAIR, a European flagship project, is clearly demonstrated by the oversubscribed COSY beam schedule, both for the FAIR experiments and accelerators. This holds for several FZJ and external programs as well which depend very much on IKP technologies provided in the past in an informal and effective way.

We are confident that the ambitious accelerator and detector projects as well as the EDM program presently pursued at IKP will become a success. We hope that the achievements obtained so far – ideas, scientific results, facilities and know-how – will help the IKP groups and their successors to play a major role also in future and in this way bring a rich scientific harvest to our societies.

#### **Next CBAC session**

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The CBAC#7 session is tentatively scheduled to take place on December 18<sup>th</sup> - 19<sup>th</sup>, 2017 in the IKP of Forschungszentrum Juelich GmbH. The final date will be communicated in due time.

*E. Steffens*

Erhard Steffens (CBAC Chair)

## 5. Addendum:

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CBAC#6 Meeting, IKP, FZ-Jülich, June 26 and 27, 2017

# AGENDA

## Monday, June 26<sup>th</sup>, 2017

08:30	Bus transfer Stadthotel Jülich to IKP (for CBAC members)		
09:00 – 09:30	<b>Closed session</b>	(IKP, room 311)	
	H. Ströher	Welcome, issues t.b.d., ...	
	E. Steffens (chair)	Organization, committee work	
	<b>Open session</b>	(IKP, room 312)	
09:30 – 09:40	H. Ströher	Welcome	
09:40 – 10:00	R. Gebel	Status of COSY	

### *Proposals are scheduled for 15' presentation + 10' discussion*

10:00 – 10:25	E002.4	JEDI-Pol.	I. Keshelashvili
10:25 – 10:50	E004.2	JEDI Pol. Database	S. Park
<b>10:50 - 11:10</b>	<b>Coffee</b>		
11:10 – 11:35	E005.3	JEDI Wien-Filter	F. Rathmann
11:35 – 12:00	A001.5	Acce. stoch.cooling	N. Shurkhno
12:00 – 12:25	A002.5	Acce. elec. cooling	V. Kamerdzhiev
<b>12:30 – 14:00</b>	<b>Lunch Break</b>		
14:00 – 14:25	A010.3	HBS	P. Zakalek
14:25 – 14:50	A010.2	Neutron Prod.(HBS)	T. Cronert
14:50 – 15:15	A011	Space Charge Effects	W. Stem
15:15 – 15:40	A012	Slow Extraction	S. Sorge
<b>15:40 – 16:10</b>	<b>Coffee</b>		
16:10 – 16:35	D002.2	STT	P. Wintz
16:35 – 17:00	D004.5	CBM	J. Heuser
17:00 – 19:00	Closed session		
<b>19:30 – 21:00</b>	<b>Dinner</b> (FZ-Seekasino) also for speakers		
21:00	Bus transfer to Stadthotel Jülich (for CBAC members)		

## **AGENDA**

### **Tuesday, June 27<sup>th</sup>, 2017**

09:00 – 12:10      **CBAC closed session** (IKP, room 311)  
representatives of the experiments should be available for  
additional information or questions

**Open session** (IKP, room 312)

12:15 – 12:30      Summary of CBAC Recommendations      E. Steffens

**12:30 – 14:00      Lunch (IKP, room 310) / End of meeting**