Town Meeting 2025 on the J-PARC Hadron Experimental Facility Extension Plan
(HEF-ex Town Meeting 2025)
February 20, 2025
J-PARC KEK Tokai Campus, Tokai Building No. 1, Room 116, and Online
https://kds.kek.jp/event/53533/

The extension plan for the Hadron Experimental Facility is a major project that our community has strongly desired and actively promoted. Led by the HUA Task Force (TF), the community has made substantial efforts to move this plan forward. As a result, it was ranked as the top-priority future project in KEK's 2022 Project Implementation Plan (PIP), for which KEK aims to secure funding. However, it is difficult to launch the project immediately due to recent increases in construction costs and other factors.

This town meeting was held to introduce new staging proposals—based on the extension plan developed by the community thus far—to realize the project earlier. The meeting aimed to facilitate an open exchange of ideas and gather broad input regarding the future of the Hadron Experimental Facility. The first meeting was conducted primarily in Japanese, with in-person participation to encourage open and active discussion. Following a briefing on the current status of the extension plan, a free-format discussion was held on how best to proceed—a total of 101 participants registered, with approximately 40 attending in person.

The second town meeting is scheduled to be held prior to HYP2025, which will take place in the RIKEN Wako Campus in late September (Sep 26 – 27) to promote broader international discussion.

【CONTENTS】

1. Current Status of the Hadron Experimental Facility Extension Plan

- **Greetings from the IPNS Director (N. Saito)**

N. Saito presented a timeline for KEK, along with an explanation of its current status and future outlook. Regarding the extension plan for the Hadron Experimental Facility, discussions have been ongoing within the Hadron Promotion Committee with the aim of realizing the plan as early as possible. However, given the current situation at KEK, it is not feasible for KEK alone to carry out a large-scale project with a total cost of 10 to 20 billion yen, and a downsizing of the extension plan is unavoidable. Nevertheless, securing budgetary resources in collaboration with universities and other institutions may make it possible to realize the full scope of the extension plan as outlined in PIP2022.

With this current situation in mind, we hope this town meeting serves as an opportunity to discuss how we can achieve tangible outcomes while advancing the extension plan and ensuring continuity into the next generation.

- **Background (F. Sakuma)**

F. Sakuma explained the progress and background of the Hadron Experimental Facility extension plan. The extension project has been developed through collaboration between the user community and the facility. In 2020, a task force was established within HUA to accelerate preparations for the plan, and it was selected in KEK-PIP2022 as a top-priority project to be budgeted under KEK's mid-term plan (JFY2022–2026).

Subsequently, the Hadron Promotion Committee, formed under the IPNS Director, continued discussions on how to realize the extension plan. However, due to various factors, such as the COVID-19 pandemic and the Ukrainian war, the estimated cost of the project increased from the original PIP2022 estimate of 15+1.5 billion yen to 20+2 billion yen. Regular meetings with the IPNS Director further deepened discussions to consider plans for early realization. In parallel, efforts have been made to secure external funding—such as through inter-university collaboration—and refine the content of the plan itself. The discussion within the Extension Task Force at the end of 2024 led to the present town meeting.

- **Staging Plans (H. Takahashi)**

H. Tkahashi presented several options for proceeding in stages, aiming to achieve the early realization of the extension project. A phased construction approach was considered and discussed to maintain the functionality of the existing beamline while completing the first stage within 10 billion yen. However, it was found that simply extending the hall and extending the primary beamline would require a budget exceeding this limit. Furthermore, to ensure crane access for maintenance, the width of the extended hall must remain the same as the current width. Even with a reduced hall expansion, constructing the T2 target, the primary beamline, and the minimum required secondary beamline would still significantly exceed the 10-billion-yen limit.

Based on these findings, the following three alternative proposals were developed:

KL2@T1.5 Plan: Instead of the T2 target in the original proposal, a target named T1.5 is placed upstream of the designed T2 target position. Construct the KL2 beamline to accept particles from T1.5 at a 5-degree angle to the north.

KL2@T1-Upward Plan: T2 target is not constructed at the first stage. Instead, construct the KL2 beamline to accept particles from the T1 target at a 5-degree upward angle.

KL2@T1-Northward Plan: Similar to the KL2@T1-Upward Plan, but the KL2 beamline is constructed at a 5-degree angle to the north instead of upward.

In all three proposals, the hall would be extended by four spans, and the HIHR/K1.1 beamlines would use the existing K1.1 beamline extending from the T1 target, located on the former KOTO

experiment site. As a result, several compromises would be necessary: the maximum momentum available for HIHR would be reduced from the originally planned 2.0 GeV/c to 1.2 GeV/c, there would be no space to accommodate K1.1BR, and HIHR and K1.1 could not be operated simultaneously.

Beam optics, beam yield, cost estimates, and timelines were presented for each proposal. Additionally, a new proposal — the HIHR/K10@T1.5 Plan — was introduced. These proposals, particularly the newly introduced one, still require further detailed examination. In the HIHR/K10@T1.5 plan, the T1.5 target is installed, the HIHR and K10 beamlines are extended to the north, and the KL2 beamline is extended to the south. In any case, if the project is pursued solely by KEK, the simultaneous construction of the HIHR and KL2 beamlines would be difficult due to budget constraints.

A staging plan for realizing the π20 beamline was also presented, consisting of three phases: 1) Provide a negatively charged secondary beam from the existing high-p beamline (the necessary budget for this phase has already been secured). 2) Construct a low-intensity π20 beamline to reduce costs. 3) Complete the final full-scale configuration.

- **HIHR/K1.1 (S. Nakamura)**

S. Nakamura explained the strangeness nuclear physics program conducted at HIHR and K1.1 beamlines. Lambda-N scattering experiments at K1.1 reveal Lambda-N interaction in vacuum. Compared to the femtoscopic study of hadron interactions conducted at heavy ion collision experiments, K1.1 experiments have advantages in measuring p-wave or higher partial wave scatterings and spin observables. Experiments at HIHR measure Lambda hypernuclei with ultra precision via (pi+, K+) reactions and study Lambda-N interaction in nuclear medium. Since the (e, e'K+) reaction experiments at J-Lab can provide data of mirror nuclei studied at J-PARC, a detailed study of YN interactions is possible. In this way, K1.1 and HIHR experiments together offer vital information in revealing the property of high-density nuclear medium which is thought to be realized inside a neutron star. The presented proposals other than the HIHR/K10@T1.5 Plan limit the available momentum to 1.2 GeV/c at HIHR, making cusp measurement and eta/eta' nuclei search become impossible. He requests that efforts be made toward the early realization of HIHR, the hypernucleus factory.

- **π20/K10 (H. Noumi)**

H. Noumi explained the hadron physics program to be conducted at pi20 and K10 beam lines. The hadron hall extension aims to elucidate "Matter Evlolution in the Universe", which spans the mystery of the matter-dominated universe to the formation of high-density nuclear matter composed of quarks and gluons. The pi20/K10 experiments will investigate the effective degrees of freedom of quarks, which form the foundation of low-energy QCD, to pursue the physics objectives of the HEF-ex project. Spectroscopic studies of Lambda_c, Xi, Omega baryon using hadron beams momenta more than 2 GeV/c will seek to reveal the properties of diquarks within baryons. The pi 20 beamline is planned to be constructed in three steps. The T106 experiment has demonstrated the feasibility of secondary particle production at the high-p beamline. Although the studies will continue at pi20 until K10 becomes available, serious consideration should be given to constructing K10 to receive a beam from the T1.5 target.

- **KL2 (K. Shiomi)**

K. Shiomi explained the flavor physics to be pursued by the KOTO II experiment at the KL2 beamline. The KOTO experiment searches for CP-violating rare kaon decay, KL→pi0 nu nubar, which is highly suppressed in the Standard Model (SM), with the branching ratio of 3E-11. This channel serves as an excellent probe for new physics beyond the SM since the theoretical uncertainty is very small. The NA62 experiment aims to observe the rare decay K+ → pi+ nu nubar rare-decay, which measures the absolute value of s→d transition. In contrast, the KOTO and KOTO II experiments focus on KL→pi0 nu nubar, which provides information on the phase of the transition, giving additional information. KOTO has reached a sensitivity of 2.2E-9 and expects to achieve below 1E-10 within a few years. However, pushing the sensitivity further is considered very difficult. Therefore, a next-generation experiment — KOTO-II — has been proposed, aiming

to reach a sensitivity below 1E-12. CERN has decided to terminate the HIKE project, which was planned as the successor to the NA62 experiment. The KOTO II proposal was prepared with researchers from NA62 experiment and HIKE projects, and was submitted.

Among the beamline options, the KL2@T1.5 plan is considered the most straightforward and feasible, whereas the KL2@T1-upward plan is regarded as practically very difficult.

- **Towards Early Realization of HEF-ex (K. Miwa)**

After explaining the development since PIP2022 and Japan's involvement in EIC, K. Miwa initiated discussions on how to realize the extension project at an early stage considering these developments. Funding has begun to be allocated for the g-2/EDM experiment, which is scheduled to proceed ahead of the hadron extension, but the allocated budgets have not met the expected levels.

As part of the Large-Scale Academic Frontiers Project, research at J-PARC has been approved for another 10 years, starting in 2023, and operational costs and related expenses are being provided. However, it is difficult to support the hadron extension plan within this budget, and securing an independent funding source will be necessary.

Japan has decided to participate in the EIC, but the budget is independent of the Large-Scale Academic Frontiers framework. The discussions at the expert committee on "EIC and the Development of Related Nuclear Physics" extended beyond the EIC to nuclear physics in general. It was emphasized that promoting nuclear physics is expected to contribute to innovation, energy, and human resource development.

We need to further emphasize the hadron hall extension plan's potential for inter-disciplinary impact through its unique accelerator/detector technologies, data processing methods, theoretical calculations, and its role in forming international research hubs.

We must consider leveraging the EIC as a starting point for advancing nuclear physics and creating synergies. What strengths do we possess that the MEXT and the KEK leadership can readily support? I would like everyone to think about this together.

2. Discussions I

- **PIP**

[Q] How will PIP projects be handled in the future?
[A] We don't know. The former Director-General believed that once a project is included in the PIP, efforts should be made to realize it. However, the current Director-General sees the PIP more as a guideline (IPNS Director)
[Q] The HEF extension project received top priority in PIP2022. Could this priority be reconsidered?
[A] No explicit statement says the previous PIP will be abandoned. (INPS Director)
[Q] Once the first stage (Stage 1) of the extension plan is completed, will we need to start over from the PIP again for the second stage (Stage 2)?
[A] Nobody knows. Good results have to be obtained from Stage 1 before proposing Stage 2. In PIP2022, the extension plan was approved as a package. (IPNS Director)
[C] I have heard that since the change of Director-General, the approach of promoting projects as a package is no longer favored. The current management believes that each of the three pillars of the extension project has to stand on its own.
[C] PIP2022 was meant to set priorities for budgeting. Budget discussions were indeed held, but ultimately, the framework emphasized scientific value over the actual budget size. Even at that time, the proposed budget (15 billion yen) was considered very large. The new management feels we are still promoting a large-scale project, even though such a budget seems impossible.

- **Discussion with MEXT**

[Q] What was MEXT's reaction and what was your impression when the extension plan was presented?
[A] When several studies are presented together, it's easier to understand if it's clear that they all

aim toward a common goal. However, our explanation failed to convey a clear explanation. They consider the project disorganized and without a clear overall direction. The number and the impact of our papers are not recognized. (IPNS Director)
[Q] In condensed matter physics, various studies are being conducted too. Wouldn't the situation be similar? Or should we focus on a single research topic instead of mentioning multiple things?
[A] In condensed matter physics, the applications and social contributions are clear. Our field is considered big science, with a larger budget than condensed matter. That's why we must clearly explain how our research contributes to and benefits society. (IPNS director, S. Nakamura)
[C] I think if KEK says they want to move forward with this project, then MEXT will support it. Super KEKB has difficulty in increasing in luminosity as planned, and the future of the ILC is uncertain. Right now, KEK mainly relies on T2K. Given the situation, what direction does KEK intend to take in the future? When thinking long-term, I believe it would be good for the domestic community to get together to promote J-PARC. What are your thoughts on that?
[A] I want to convince the KEK management. (IPNS Director)
[Q] Once super KEKB ends, where do you think KEK will head next?
[A] Discussions are ongoing (IPNS Director)

- **Inter-University Collaboration**

[Q] Inter-university collaboration has to offer benefits on both sides. Who at KEK is the appropriate person to consult with about what can be done to ensure the collaboration is mutually beneficial?
[A] It is necessary to convince the management that there are mutual benefits in education and research. Since the management often comes from different fields, the conversation would likely to start from the basics, such as "what is hadron physics?". In this way, KEK has established many satellite offices of universities at J-PARC. I (the Director) will serve as the point of contact, so I would encourage you to start, even informally, with causal conversations. No specific discussions with university management have taken place yet. The only such discussion was with an executive from Osaka University two to three years ago. (IPNS Director)

- **EIC**

[Q] What are the fields of expertise of the members of the Expert Panel? I am curious how the EIC is perceived by people from other fields such as condensed matter, atomic and molecular physics, or quantum computing.
[A] From other fields, the Director of the National Institute for Fusion Science and the Deputy Director of the Quantum Center at Osaka University are members. (K. Miwa)
[Q] Is it a good idea to use a broad keyword like "quantum"? Perhaps the only people who can genuinely view the field in a broad and integrated way are from nuclear physics. Having people who can bridge different layers of theory and experiment may be a unique strength of our field.
[C] Professor Kubo (nuclear reaction theory) used nuclear physics to promote an understanding of quantum phenomena. We should learn from that example.
[Q] EIC is not a KEK project, but can the IPNS say something about it?
[A] If we clarify what we really want to pursue, there is no reason we can't get involved. For example, I think there's room to collaborate on the technical side, such as detectors and data acquisition systems. (IPNS Director)
[C] The high-energy physics community is cautious about the EIC. There are concerns about EIC taking away budget or being forced into it as an obligation. Up until now, we've proposed experiments ourselves, engaged in discussions, and advanced things on our own terms. That is why we've been able to endure even tough challenges. If a project is imposed top-down, we won't be able to bear it.
[C] KEK is a science-oriented organization. But now, everyone is jumping on the "quantum" bandwagon. That's not how it's supposed to be.
[C] We want to create a framework to move forward to J-PARC as "All Japan" when the EIC succeeds. We are not saying KEK must join EIC. The nuclear physics community is like a collection of small companies. I hope we can build a shared understanding and bring everyone together. The traditional approach no longer attracts funding. In nuclear physics, we've never had

a platform for unified leadership.
[C] When we talk about “All nuclear physics”, we must include discussions on the science itself, or the KEK management won’t be convinced.
[C] EIC will eventually come to an end. What’s important now is how the nuclear physics community makes the most of this opportunity, using the EIC as a good initial trigger.
[C] KEK is being asked, “Why are you working on CMB?” Some say, “Isn’t KEK supposed to do physics using accelerators?”. KEK has argued that CBM is scientifically and technologically connected. The same can be said for the EIC. It’s also connected.
[C] A transformation in the community’s methodology is needed.

- **Foreign Participation and Its Contribution**

[Q] How many overseas researchers are participating in KEK projects?
[A] Out of 1,000 Belle collaborators, the Japanese are less than 100. T2K has overseas researchers seven to eight times more than Japanese members. KOTO-II and COMET attract foreign members. Internationalization is important for nuclear physics experiments as well. (IPNS Director)
[C] Experiments in the Hadron Hall are relatively short-term, but the research members in a group are tightly bonded. From the perspective of overseas researchers, this can make it difficult to get involved. They often do not know how to participate. For example, if a large collaboration is organized for a beamline and the collaboration performs a series of experiments for a long period, then it is easier for foreign researchers to participate.
[C] It is a good idea. For example, A proposal at GSI-FAIR involves about 300 people. It also has a good educational system.

- **Beamline as a Collaboration**

[C] From an organizational point of view, each beamline needs a spokesperson, physics coordinator, and technical coordinator. In PANDA, theories are also involved and take responsibility for handling theoretical aspects.
[C] During the discussion towards PIP2002, there was an attempt to create a physics book at HEF initiated mainly by theorists. However, it eventually faded out. Creating a physics book for each beamline might be more manageable. The 3rd white paper is already organized by beamline, so it might be good to move forward based on that.
[C] Strengthening the collaboration structure of HIHR and involving more theories would be beneficial. However, there‘s concern that a maximum momentum of 1.2 GeV/c could limit the physics potential.
[C] Forming collaboration is essential for further internationalization of J-PARC.
[C] For example, the high-p collaboration has about 100 members. But if not managed carefully, it has a risk of falling apart. The early realization of the pi20 beamline, which serves as its foundation, is crucial. Although some theorists are involved in discussions, they are not formally part of the collaboration. If the roles and responsibilities of collaborators are not clearly defined, it becomes difficult for newcomers to join.
On the other hand, working within a familiar group without formal documentation saves time by avoiding broad discussions. It will take time to prepare written documents about rules and duties. The scale is getting so big that a well-defined structure becomes essential for proper management. It should be made clear that the collaboration must take responsibility for maintaining its beamline.
[C] The SKS/S-2S user collaboration at K1.8 is relatively successful. It may be difficult to join without connections, but anyone can participate if they consult with someone in the group. K1.8 is a loosely structured collaboration, but it may be time to rethink and tighten the organization.
[C] At JLab, collaboration formation is done in a lab-oriented manner.

- **Human Resource Development and Education**

[Q] From the perspective of theorists, Hadron Hall succeeds in developing individuals with well-rounded capabilities because experimentalists in Hadron Hall experience the whole process of experiments, building the beamline, preparing the detectors, conducting experiments, and

analyzing the data. You should be proud of it.
[A] I agree. However, the time required for the process has become longer, so continuing in the same way is becoming more difficult. (IPNS Director)
[Q] Ideally, if the hall were larger and had more beamlines, it would be possible to provide that kind of training. Hadron Hall has so few beamlines that it is losing the opportunity.
[A] Building lots of beamlines is no longer a viable solution. (IPNS Director).

3. Discussions II

- **Proposal to build HIHR/K1.1/KL2 to Accept Beam from Existing T1 target.**

[Q] What do you think about the proposal of using T1 produced particles (KL2@T1-upward plan / KL2@T1-northward Plan)? K1.1 can be built with only a few billion yen.
[C] The proposal lacks ambition.
[C] For example, if the Hyperon Spectrometer (HS) can be placed in front of SKS at K1.1, a lot of physics opportunities open. However, according to the proposal where K1.1 shares the line with HIHR, there is not enough space for HS and even for the helium compressor. If the area becomes too small, the range of possible experiments will also be limited.
[C] If HIHR is extended from T1, it might cut off the future possibility of adding a T2 target.
[C] From the perspective of the KL experiment, there would be no issue for KL2@T1-northward if the wall can be drilled and there is a way to partially compensate for the reduced beam intensity, such as by increasing the T1 beam loss. Of course, using the T1.5 target is preferable.
[C] The T1 and T1.5 options differ in cost by about 2 billion yen, but it has to be noted that the T1 estimate does not include the costs for angled installation or drilling the concrete walls. Drilling the wall involves large-scale construction as the surrounding area of beam holes must be excavated and rebuilt. Collimators would also need to be installed. Since the south wall contains a large amount of iron and cannot be drilled, the current plan considers drilling the north wall, which contains no iron. However, the longer the extension is delayed, the more likely it will occur after beam intensity increases, leading to greater radiation exposure during construction.

- **T1.5 Plan**

[Q] Is a vacuum chamber necessary around the T1.5 target?
[A] Yes, it is. In addition, some iron must be added to the floor of the T1.5 position as it is very thin. Instead, the T2 position has a thicker floor, as it is currently occupied by the beam dump. (H. Takahashi)
[Q] Where the K10 beamline would be when it is built to beam from the T1.5 target?
[A] I am thinking about extending it to north from T1.5 target (HIHR/K10@T1.5 plan). (H. Takahashi)
[C] How much of the upstream area (around the target) needs to be initially prepared for other beamlines depends on how much radiation exposure will be acceptable for the future construction.

- **Future of the KOTO Experiment**

[Q] Suppose KOTO continues to take data in the existing beamline due to the delay in the extension. Is there a possibility of improving sensitivity by upgrading the detector?
[A] We have a shortage of space in the current experimental area. There may be a slight possibility of improvement, but it could involve a significant change in the experimental concept. (K. Shiomi)
[C] For KOTO II, this year will be a major turning point as a collaboration is being formed. We also plan to secure funding for the detector.

- **Extension Project from a Theorist's Perspective**

[C] Making the physics objectives understandable to researchers in other fields is important. For example, when performing spectroscopy or interaction measurements, we must clearly understand what we aim to learn from those results. We should always think about the kinds of answers others might be looking for.

[C] We have a wealth of data for light quarks, and heavy quarks benefit from heavy quark symmetry, but strangeness is unique. Data on strangeness is limited, and the theoretical understanding remains unclear. Therefore, using strangeness as a probe to further explore the quantum many-body system is highly appealing. It would be ideal if such discussions could be advanced through collaboration across experimental physics at large accelerator facilities, computational science, and theoretical research.

- **Current Status Toward the Realization of the Extension**

[Q] The extension plan written in PIP2022 requires about 20 billion yen. Is there a way to obtain such a budget at once by securing funding not only from KEK but also from external sources?
[A] At present, we have no such plan. Ideally, KEK would build the facility infrastructure while universities construct the secondary beamlines. However, the reality is that KEK cannot provide the 10 billion yen needed for the facility's construction. It is also true that securing external funding for facility construction is very difficult. (Secretary)
[C] The KL2@T1.5 plan requires 10 billion yen for building, the T1.5 target, and the primary beamline (without KOTO-II detectors).
[C] The g-2 project is a 5-billion-yen project under the Frotier framework, and just the extension of the MLF-H line building requires about 1 billion yen. Even securing 1 billion yen has been extremely challenging. The reality is that relying solely on the Frontier budget is tough.
[C] Inter-university research institutes were originally established to undertake projects that a single university could not handle. However, MEXT appears to reconsider the role.
[C] Can we realistically secure 10 billion yen for the first stage? Does anyone have a clear view of managing the 30 billion yen Frontier budget? Within that, operation and maintenance costs must also be covered, so even projects costing several billion yen are difficult to proceed with. Moreover, there is no clear candidate funding agency. For reference, Hyper-K is also being built with funding from universities.

- **Budget for the Extension**

[C] When funding is secured through university collaboration, it can lead to additional matching funds. This creates pressure on KEK.
[C] Establishing multiple satellite offices to strengthen influence on KEK is a good strategy.
[C] External funding has been steadily accumulated since the J-PARC construction phase, with more than 5 billion yen secured for the Hadron Hall alone. Making this more visible would be beneficial.
[C] Since IQPN is still in its early stages, only virtual connections exist at this point, but we aim to cooperate in making joint budget requests. A good example is INFN in Italy. However, as has been pointed out, obtaining funding for building construction through university collaboration is difficult.
[C] For example, if a new budgetary framework such as “Chiiki-Chukaku” becomes available, it should be pursued.
[C] Is securitizing the building possible to secure external budgetary sources for building construction? How about naming rights?
[C] It may be possible for universities to fund the beamline components, but the main issue remains how to secure the building to install it initially
[Q] For instance, in the 9.9-billion-yen plan of KL2-first KL2@T1.5 plan, are there some costs that can be covered by universities or other institutes?
[A] Everything except the building could potentially be covered. In the case of COMET, shielding was purchased with overseas funding. In this case, it would be ideal if the remaining 4.1 billion yen, after subtracting 4.4 billion yen for the building and 1.4 billion yen for the KL2 annex, could be contributed by universities or other sources. (Secretary)
[C] When trying to obtain external funding, the extended hall must exist first; otherwise, funds won’t be granted. Will simultaneous budget requests be submitted through university collaboration?
[Q] Can KL2 and HIHR each request around 7.5 billion yen simultaneously?
[A] It may be possible if inter-university collaboration is utilized effectively. (Secretary)

- **How to Proceed for the Realization of the Extension**

[Q] How do we proceed with pi20?
[A] One possible approach is to use the secondary beamline construction at high-p as a breakthrough to overcome the current stagnation. This doesn't mean giving up on the full extension plan. Rather, since promising results are expected from the secondary beamline, it may be better to produce outcomes there first and use them to lead into the next stage. (IPNS Director)
[C] Proceeding with only pi20 without other beamlines is unacceptable.
[A] That's not what I meant. (IPNS Director)
[C] Instead of waiting until we can secure the full 10 billion yen, it would be better to start with what we can do now. Taking even a small step forward is important. However, we must not let it end there.
[C] It is essential to build a framework that includes a funding strategy to proceed with future extensions. We must design a mechanism that makes progress on the extension project.
[C] The Budget required for pi20 is relatively small. It may be possible to obtain it through a supplementary budget. Therefore, we should submit a budget proposal on both the pi20 plan and the main extension plan simultaneously.

[C] We are being asked to lay out a staging plan. If we don't show results in the initial stage, there will be no next stage.
[Q] What is the level of results expected to move to the next stage? Are priorities going to be determined based on the outcomes?
[A] Up until now, construction decisions have been influenced by PAC approval status. At the same time, the PAC declines to evaluate proposals that intend to use beamlines whose construction plans are not yet firmly established. (J-PARC Director)

[Q] You said that the results from Hadron Hall are insufficient. How large is the gap between the level of results that KEK expects and the reality?
[A] T2K published a relatively small number of papers, but each paper has received close to 1,000 citations. Belle published papers on hadrons with even more citations than their paper on CP violation. One of them has about 2,700 citations. On the other hand, many papers from Hadron Hall have fewer than 100 citations. A KOTO paper was cited more than 240 times.
If we continue to advertise the outcomes, for example, by hosting workshops regularly, we can increase citations. (IPNS Director)
[A] The total citations for all T2K papers are around 8,000. The number is 1,500 for papers from Hadron Hall. (J-PARC Director, Secretary)
[C] As collaborations grow, the number of citations will likely increase as well.
[C] When more results are expected, we are forced to do experiments using existing beamlines. Starting from pi20 may also attract attention as the EIC-related projects.

[Q] Is it possible to build HIHR in the northern part of the existing hadron hall, say the K1.8/K1.8BR areas?
[A] HIHR can be built at K1.8BR. However, in that case, HIHR cannot run simultaneously with K1.8, where a study on S=-2 hyper nuclear physics using S-2S spectrometer takes place. That would make operations very inefficient. Also, a new building would be required to supply power and water for the magnet system. (S. Nakamura)

- **Further Consideration on Staging Plans**

[Q] Further consideration on staging plans is needed. The task force seeks endorsement from the community to proceed with discussions on the staging plan in the task force.
[A] The community has endorsed further discussion of the staging plan in the task force.