



WAO 2023

Tsukuba, Japan

Hosted by KEK

Cohosted by NIRS

Kazuro Furukawa for the preparation group



Venue

◆ Epochal – International Convention Center, Tsukuba

- ✧ <<https://www.epochal.or.jp/en/>>
- ✧ <<https://www.epochal.or.jp/en/user-guide/>>
- ✧ <<https://www.epochal.or.jp/en/floor-guide/surrounding-guide/>>
- ❖ 60 minutes from **Narita**, 100 minutes from **Haneda airports**
 - ✧ Narita is closer to NIRS, Haneda is closer to Tokyo
- ❖ 50 minutes from Tokyo, 3 hours from Kyoto, 10 minute walk to station
- ❖ 20 minutes to **KEK**, 80 minutes to **J-PARC**, 120 minutes to **NIRS**
- ❖ Middle-size halls are available for us, with small rooms
 - ✧ For 200 people (2F), 230 people (3F)
- ❖ **September 10 – 15, 2023**, no other options, sorry
- ❖ Several hotels nearby, and dormitories at KEK
- ❖ Can visit KEK (SuperKEKB, PF, PF-AR, LINAC, cERL, STF), J-PARC, iBNCT(?), NIRS, etc.



Tsukuba City

Tsukuba City Center



Summer Festival



Pleasure in Spring



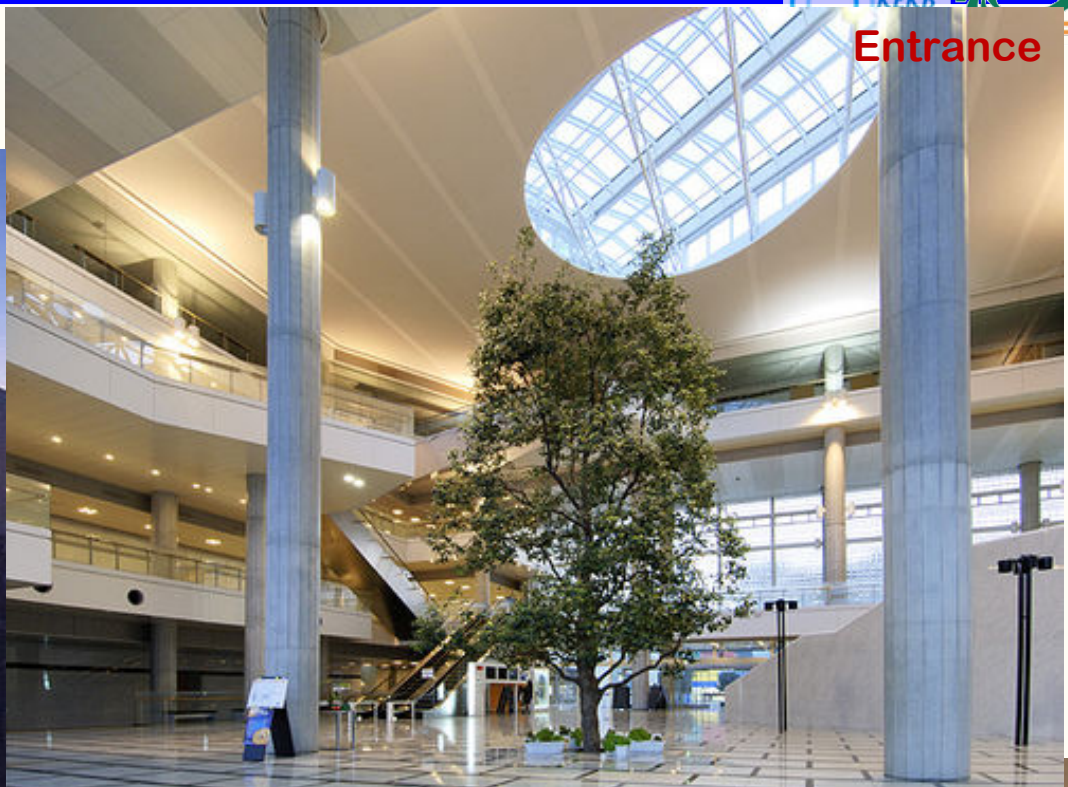
Epochal

Entrance

Epochal International Congress Center



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Mid-size Hall



Kids Space

中ホール200

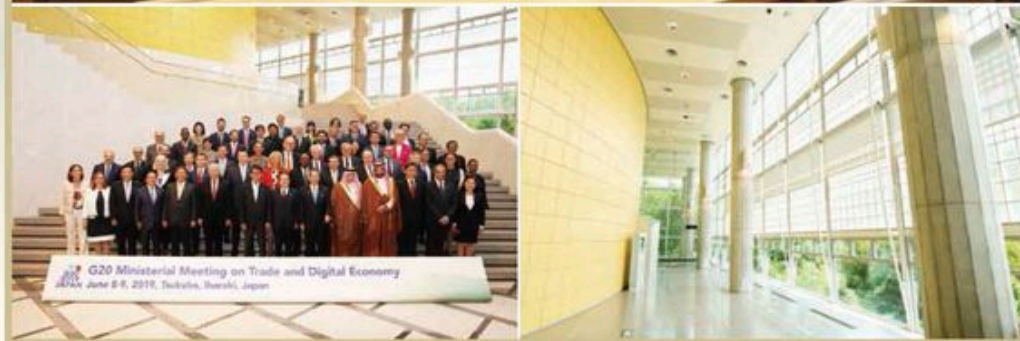
Convention Hall 200

木目を基調とした、落ち着いた雰囲気の中で会議を進行できるのが中ホール200。ゆとりある200名の固定席をはじめ、3ヵ国語同時通訳や世界標準のAV機器なども完備しています。

The Convention Hall 200, which can comfortably seat 200 people, offers a relaxing atmosphere for meetings, the latest audio-video equipment, and simultaneous interpretation in 3 languages.

落ち着いた雰囲気での固定席ホール

The fixed-seat hall has a relaxing atmosphere



施設概要

【中ホール200】

- 座席：固定座席200席
- 面積：415㎡
- 天井高：6.8m~8m
- ステージ：幅12.8m 奥行2.8m~3.8m
- 各種照明機器：単相三線(200/100V)100A×1ヶ所

Outline of Facilities

- (Convention Hall 200)
- Seating: 200 terraced seats
 - Floor area: 415㎡
 - Ceiling height: 6.8m to 8m
 - Stage: Width: 12.8m, Depth: 2.8m to 3.8m
 - Various temporary power supplies: Single-phase three-wire (200/100V) 100A×1 places

【中ホール300】

- 座席：固定座席88席+平土間
230席(スクール席) / 300席(シアター席)
- 控室1室：控室301 (12.5㎡)
- 天井高：7m
- 各種照明機器：単相三線(200/100V)50A×2ヶ所

(Convention Hall 300)

- Seating: 88 terraced seats (fixed)
- 230 non-terraced seats (school) / 300 seats (theater)
- 1 Walking room: Room 301 (12.5㎡)
- Floor area: 460㎡
- Ceiling height: 7m
- Movable electronically-controlled stage: Width: 12m, Depth: 4m
- Various temporary power supplies: Single-phase three-wire (200/100V) 50A×2 places

主な支援設備

- 映像設備：高輝度、高解像度プロジェクター・音響コントロールボード・パソコン切替・照明シーンの切替
- スクリーン：200インチスクリーン (W4.4m×H2.5m)・複機スクリーン (センター1機) W4.4m×H2.5m・電機スクリーン (左右2機) W3m×H3m (中ホール300は右1機)
- 4ヵ国語同時通訳設備 (中ホール200は3ヵ国語対応)・ディスカッションユニット (参加者・議長共20名)
- LAN設備・カメラ映像収録システム・音響及び照明設備・各種照明機器
- 吊り棒(トン) (寸法10m:中ホール200 / 7.5m:中ホール300)・CATV放送受信 (地上デジタル放送別対応)

Main support facilities

- Video equipment: High-brightness, high-definition projector・Sound control table・PC switching
- Lighting scene switching desk
- Large screen: 200-inch High-Vision screen (W4.4m×H2.5m)/Automatic screens (center one: W4.4m×H2.5m)
- Electronic screen (1 left/1 right screen) W 3m x H 3m (1 right screen in Convention Hall 300)
- Translation facilities for 4-language simultaneous translation(3-language in convention Hall 200)
- Discussion unit(Participants: 20chair/ person)
- LAN equipment・Camera image-recording system・Sound and dimming equipment
- Extra telephone lines
- Hanging bars 10m (Convention Hall 200), 7.5m (Convention Hall 300)
- CATV broadcast reception (Digital terrestrial broadcasting available)

中ホール300

Convention Hall 300

中ホール300の最大の特徴は、フレキシブルな機能を持った前方部分の平土間。スクール・シアター・円形・馬蹄型など、用途に応じて様々なレイアウトを設定することが可能です。

The most distinctive feature of Convention Hall 300 is the functional flexibility in the front space. It can be arranged in many different layouts such as school, theater, round table format, horseshoe layout etc. to adjust to a wide variety of purposes.

目的に応じた様々なレイアウトにも対応

The hall can be arranged in a variety of layouts to match the purpose



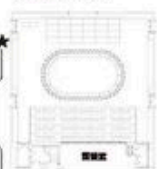
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Layout

中ホール200
Convention Hall 200



中ホール300
Convention Hall 300



円形 122 席
Circle 122 seats



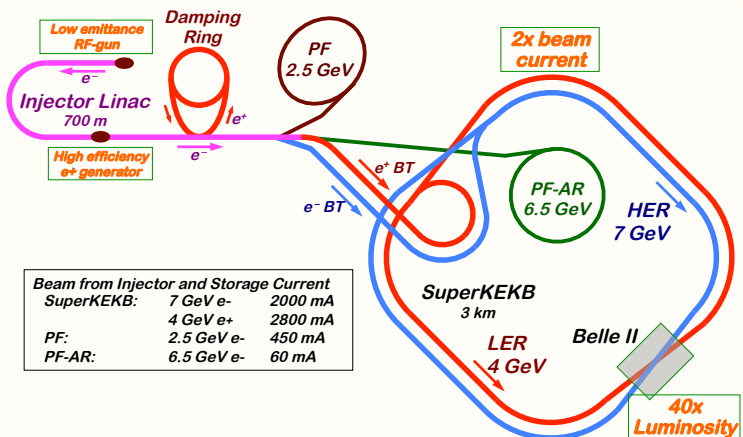
スクール 230 席
School 230 seats



シアター 300 席
Theater 300 seats

Accelerators

◆ Tsukuba



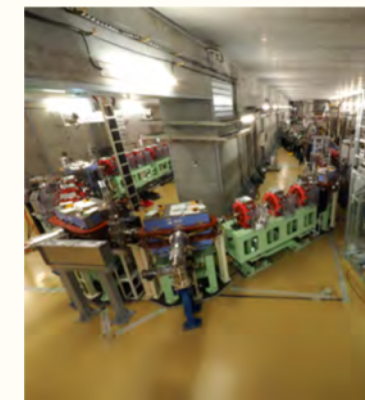
Electron/Positron accelerator complex for particle physics and photon science

◆ Tokai campus

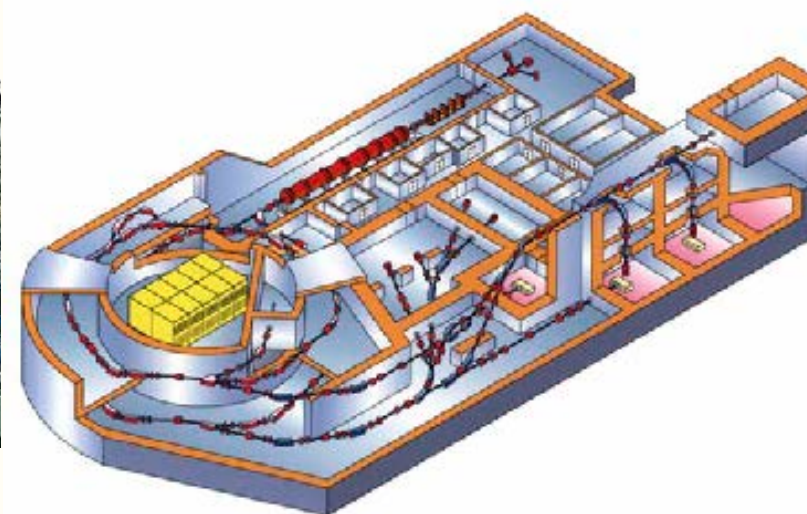


BNCT cancer therapy

R&D accelerators



◆ NIRS/Chiba



Institute of Radiological Sciences

Linac





Injector Linac History

Project	Injection Energy	JFY Exp. Energy	1970			1980			1990			2000			2010			2020					
			8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
Photon Factory	2.5 GeV	2.5 GeV	Construct.			Injection Operation																	
TRISTAN	2.5 GeV	32 GeV	Construct.			Injection Operation																	
Slow Positron	2.5 GeV - 55 MeV	0.1 - 35 keV	Operation																				
KEKB	8 / 3.5 GeV	8 / 3.5 GeV	Construct.			Injection Operation																	
PF-AR	2.5 GeV - 6.5 GeV	5 - 6.5 GeV	Injection Operation																				
SuperKEKB	7 / 4 GeV	7 / 4 GeV	Construction															Injection					

◆ 39 years of operation

❖ 200,000 hours accumulated till May.7.2020

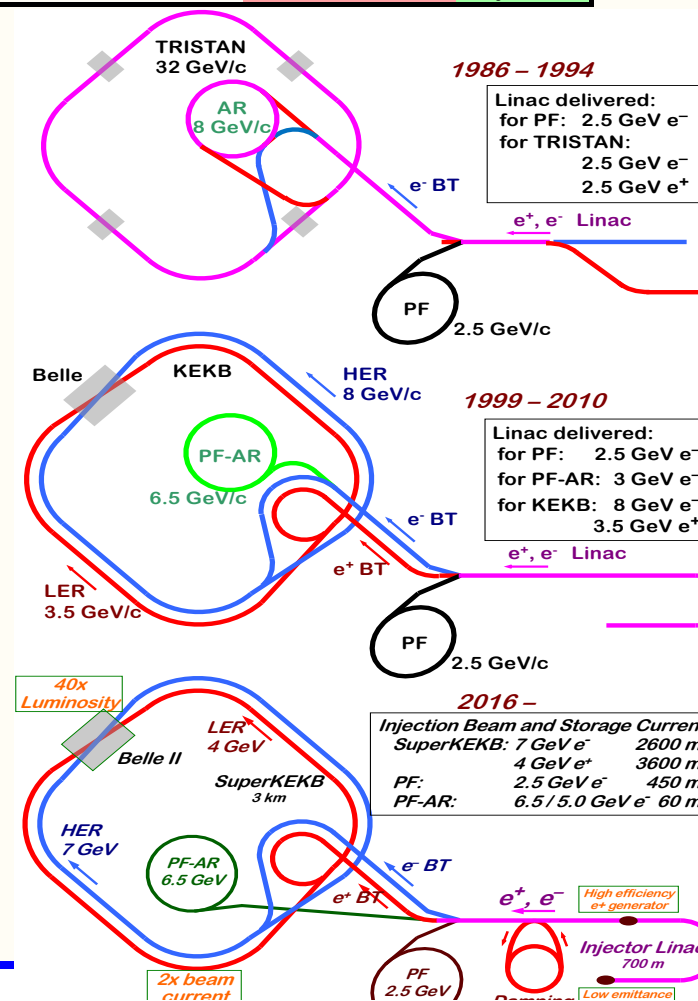
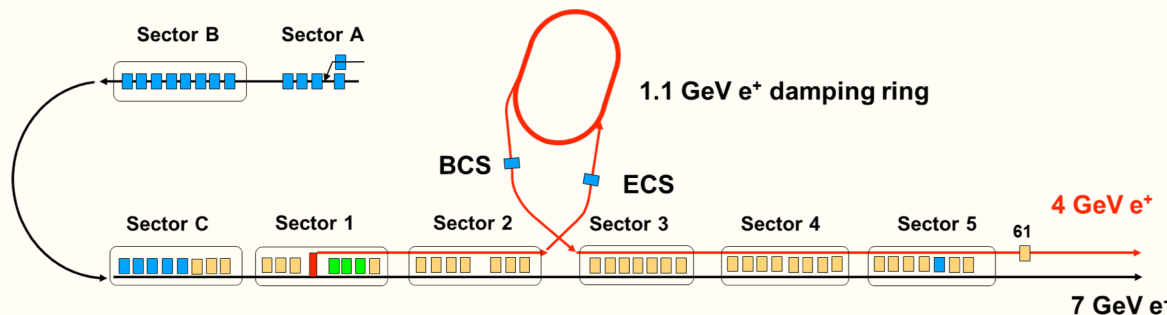
❖ for particle physics and photon science

✧ Started with one of first dedicated light sources, PF

✧ and the highest energy collider, TRISTAN with SRF

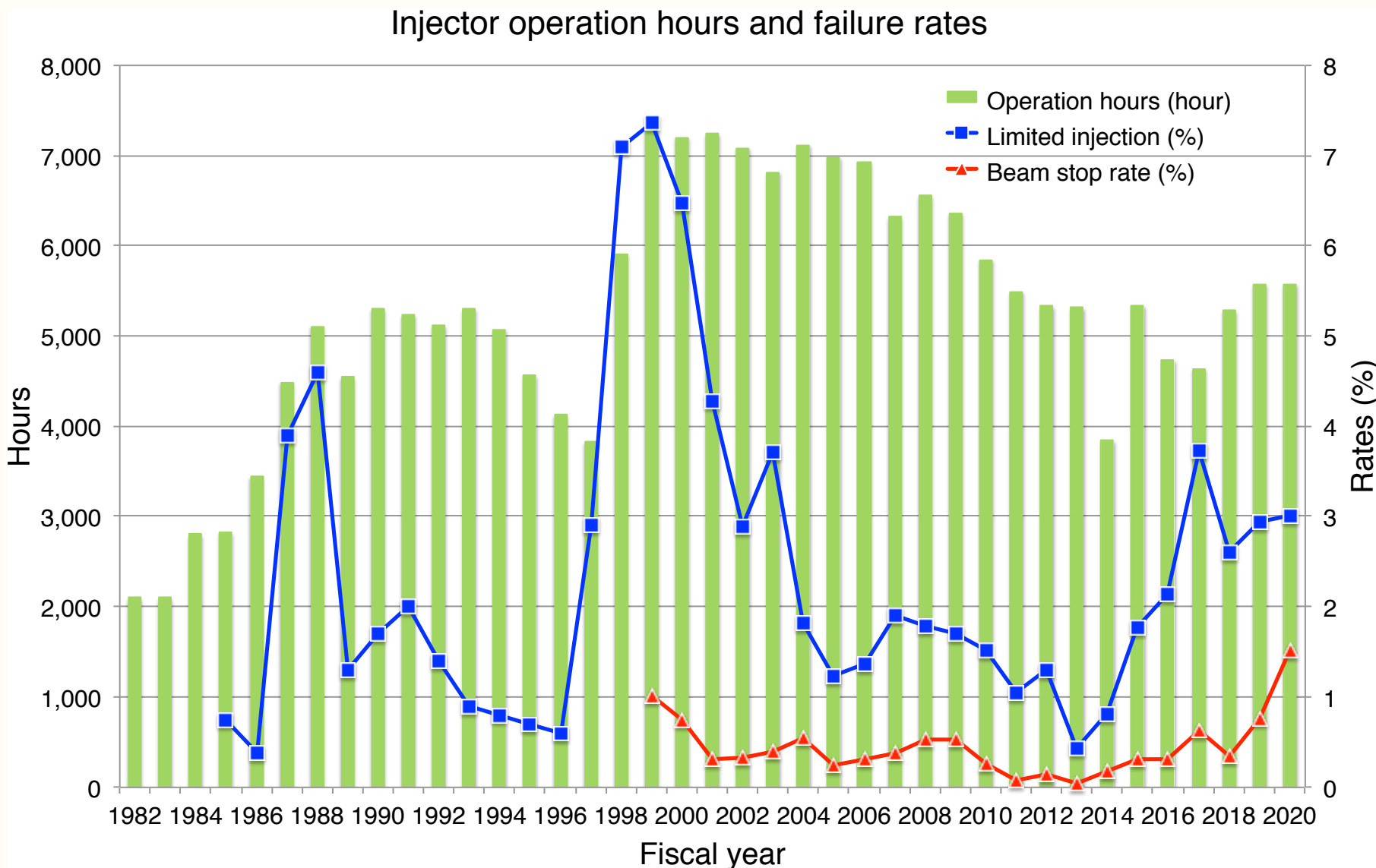
❖ Still many devices from the first generation

✧ even for SuperKEKB injections



Operation Hours

◆ Yearly operation hours – achieved 200 k hours in 2020





Mission of electron/positron Injector in SuperKEKB

◆ 30-times higher Luminosity

❖ 15-times higher collision rate with nano-beam scheme

❖ → Low-emittance even at first turn

→ Low-emittance beam from Linac

❖ Twice larger storage beam

❖ → Shorter storage lifetime

→ Higher beam current from Linac

◆ Linac challenges

❖ Low emittance e^-

❖ with high-charge RF-gun

❖ Low emittance e^+

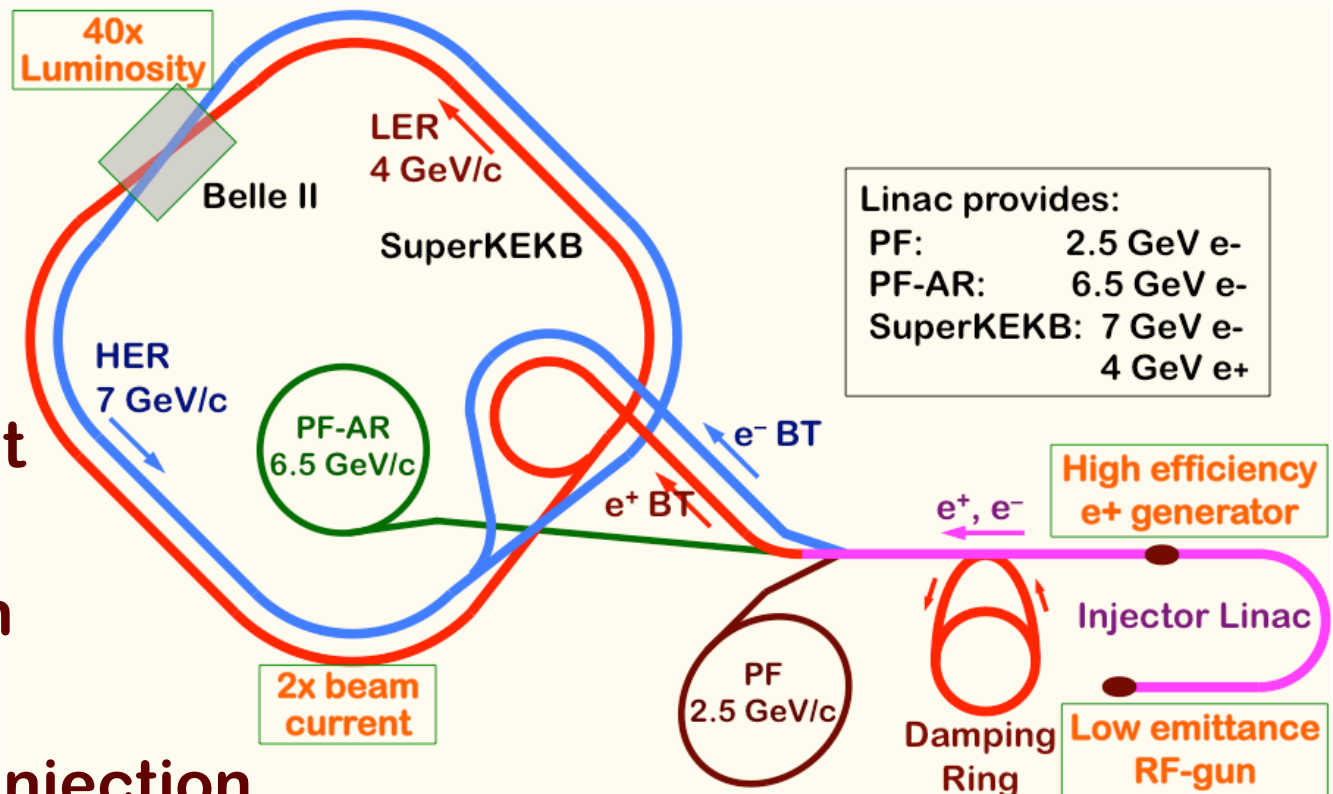
❖ with damping ring

❖ Higher e^+ beam current

❖ with new capture section

❖ Emittance preservation

❖ with precise beam control



◆ 4+1 ring simultaneous injection



WAO2023 Status

- ◆ Approved by KEK admin. and the department director, Koseki
 - ❖ No financial support expected

- ◆ LOC: E.Takada, Y.Iwata (NIRS), N.Iida, F.Miyahara, H.Ikeda, K.Furukawa (KEK)
 - ❖ Should invite some more

- ◆ May provide accelerator visits
 - ❖ If the operation schedule won't change drastically

- ◆ Discussing with an scientific organization for a fund for international meetings up to 1M JPY (10k USD)

- ◆ Another possibility for a small fund

- ◆ Should decide rooms before March 2023
 - ❖ Cancellation: -4 months 10%, -1 month 50%

Welcome to Tsukuba

◆ September 10 – 15, 2023

❖ Can visit KEK (SuperKEKB, PF, PF-AR, LINAC, cERL, STF), J-PARC, iBNCT(?), NIRS, etc.

◆ Epochal – International Convention Center, Tsukuba

❖ 60 minutes from **Narita**, 100 minutes from **Haneda airports**

◆ Japan is the No.1 country that has less Visa regulations

◆ See you all at the in-person workshop in Tsukuba to share our valuable experiences
WAO2023 !!



<http://www-linac.kek.jp/linac/>