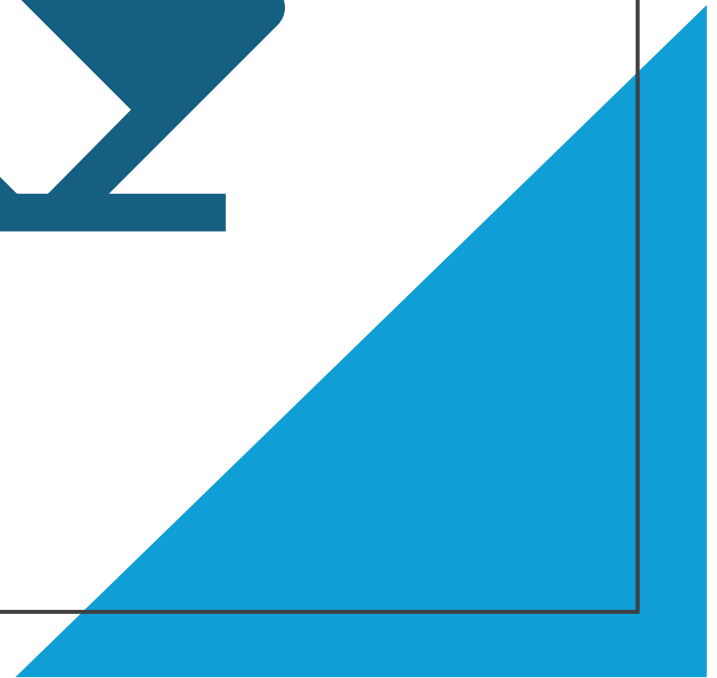
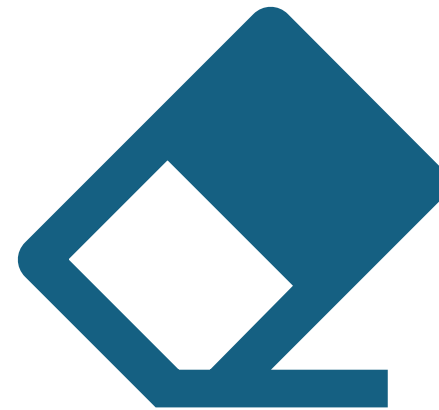


TYL
(FJPPPL) in Japan
since 2005

Junji Haba



The first mail in my mailbox named TYL
attached with



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Late Yoji
Totsuka,
Former
KEK DG





Late Denis Perret-Gallix



Late Fumihiko Takasaki

Designing New “Virtual” laboratory

- CNRS concept - [Associated International Laboratory](#) (AIL)
 - France Japan **Particle Physics** Laboratory (FJPPL) not focused on a limited area nor project.
 - Starting collaborations toward future project were encouraged. T2K, ILC and then Belle II
 - Support for solid established collaborations like LHC-ATLAS was not a main target (as originally intended)
 - R&D collaboration in accelerator and detector technologies for future project were highlighted.
 - The field of computational physics/simulation also managed to find its way in the program.

Proposals in 2006

D_R&D_1	A common R&D on the new generation detector for the ILC
D_R&D_2	R&D and Application of TPC technology
D_R&D_3	R&D for new photon detector
D_R&D_4	R&D on the new generation of large area Si tracking system
D_R&D_5	R&D on novel pixel devices
D_R&D_6	R&D on liquid xenon detector technology
LHC_2	ATLAS computing
LHC_3	Superconducting Magnets for LHC Accelerator Upgrade
B_1	Development of the software package CKMfitter
B_2	Contributions to B physics
Nu_1	R&D of neutrino beam production for future (Multi-)MW proton facility
Nu_2	R&D of detectors for future high statistics, high precision experiment
Nu_2-WP2	R&D of detectors for future high statistics, high precision experiment (R&D for reactor anti-neutrino experiments)
SDA_1	Development of the event generators for physics simulation
Comp_3	GRID Interoperability
A_R&D_1	Applications of a high finesse Fabry Perot Cavity for the ILC
A_R&D_2	Design of the linear collider machine-detector interface and ATF-2 at KEK
A_R&D_3	R&D on High Power Couplers for the ILC
Hadron	OPERA- Hadronthérapie

Birth of TYL:

Key introduction of the great legacy of TY in the history of F-J collaboration

- By Emi KOU 2008 in FJ 150 Anniversary.



Toshiko Yuasa

Emi KOU
(Laboratoire de Physique Théorique, Univ. Paris XI)

Toshiko Yuasa (1909-1980)

- CNRS researcher (appointed 1949)
- First Japanese female physicist (1943)
- Initiator of a nuclear physics project in the framework of the CNRS/JSPS corporation (1981)
- The year 2008: an event in her honour will take place as part of the CNRS initiative for the 150th anniversary of France-Japan diplomatic relationship

Settling down in Paris

- 5th May 1949 CNRS chargé de recherche, Collège de France
- 1972 CNRS Directeur de recherche, IPN (Orsay)
1975 CNRS Maître de recherche honoraire
- March 1962 PhD from Kyoto Univ. "Étude du type d'invariant de l'interaction Gamow-Teller en désintégration beta de ^6He "

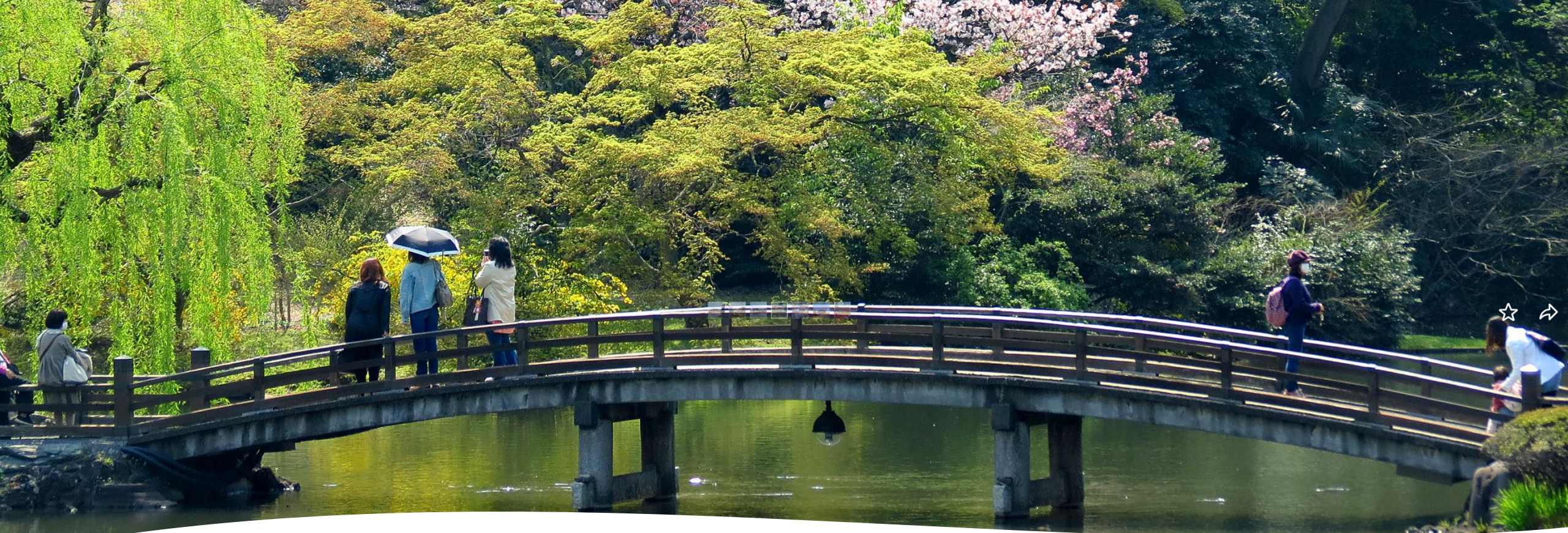


1957 (48 years)

FJ 150th anniversary

- Memorial event at the CNRS headquarters in October 2008 for the occasion of the 150 anniversary of the French-Japanese diplomatic relation.





Shinjuku Gyoen National Garden

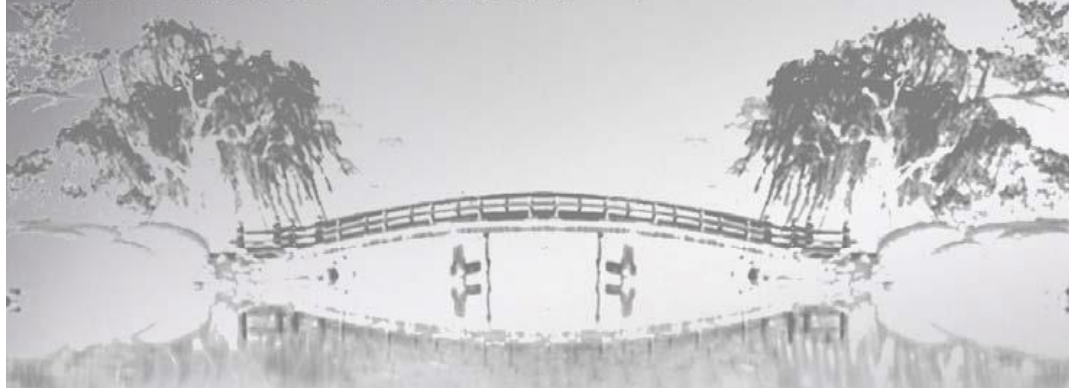
新宿御苑

DPG (one of funding co-directors of FJPPL) impressed by the story of Toshiko Yuasa and realized that she was acting a great role as an important bridge between F and J in the early stage of physics researcher exchange.

He proposed to name FJPPL as Toshiko Yuasa Laboratory.



TOSHIKO YUASA LABORATORY



FRANCE-JAPAN PARTICLE PHYSICS



- DPG made a fake picture of “Bridge of Symmetry” with no AI agent!

Name “Toshiko Yuasa” gives some exercise to TYL

- She graduated the Ochanomizu Univ., which “monopolizes” her name. TYL had to reward OU for allowing us to use her name.
 - ✓ Establishment of a new prize for excellent female scientists named after Toshiko Yuasa: the [TY Award 湯浅年子賞](#), sponsored by TYL accompanied by a fancy medal.
 - ✓ Creation of “[TYL Camp for Science Girls](#)” to encourage high school girls to pursue careers in science
 - ✓ Special session to be organized by students of OU in the TYL Workshop (scheduled in 2011.5.11-13 @Hayama 葉山)
 - **Cancelled due to 2011.3.11 Great Earthquake**

TY Award 2018 to Emi Kou



École pour jeunes étudiantes souhaitant devenir des scientifiques.

TYL Science Camp for Girl

理系の扉
あけてみない？

Toshiko Yuasa Laboratory スクール

理系女子キャンプ

14th



Distinguished guest lecturers in 20 years

- **Emi Kou (LAL)**
- **Sylvie Rosier Lees (LAPP)**
- **Helen Quinn (SLAC)**
- **Catherine Cesarsky (ESA)**
- **Ursula BASSLER (IN2P3)**
- **Marie Emmanuelle Couprie (SOLEIL)**
- **Nathalie Palanque-Delabrouille**
- **MARION Frederique (LAPP)**
- **Lydia ROOS (IN2P3)**
- **Yasmine sara Amhis (IJCLab)**
- **Cristina Carloganu (LPC)**
- **Julie Malcles (CMS-Saclay)**



30 young
active female
researchers
in Japan



~100 female
graduate
students as TA

- More than 400 girls have participated and been encouraged and inspired so far in 15 years history



TYL contributions to many Science projects

- Belle/KEKB, Belle-II/SuperKEKB
- T2K
- ATLAS, ALICE
- ILC R&D both in detector and accelerator
- Pixel sensor R&D, photon sensor R&D, MPGD R&D, ASIC ...
- Geant4
-

Some selected achievements in my memory

TYL brings French participation in the Belle II experiment



PTEP

Prog. Theor. Exp. Phys. **2019**, 123C01 (654 pages)
DOI: 10.1093/ptep/ptz106

The Belle II Physics Book

E. Kou^{75,*,6,†}, P. Urquijo^{145,1,†}, W. Altmannshofer^{135,§}, F. Beaujean^{79,§}, G. Bell^{122,§}, M. Beneke^{114,§}, I. I. Bigi^{148,§}, F. Bishara^{150,16,§}, M. Blanke^{49,51,§}, C. Bobeth^{113,114,§}, M. Bona^{152,§}, N. Brambilla^{114,§}, V. M. Braun^{50,§}, J. Brod^{112,135,§}, A. J. Buras^{115,§}, H. Y. Cheng^{43,§}, C. W. Chiang^{2,§}, M. Ciuchini^{59,§}, G. Colangelo^{128,§}, A. Crivellin^{102,§}, H. Czyz^{156,29,§}, A. Datta^{146,§}, F. De Fazio^{53,§}, T. Deppisch^{51,§}, M. J. Dolan^{145,§}, J. Evans^{135,§}, S. Fajfer^{109,141,§}, T. Feldmann^{122,§}, S. Godfrey^{7,§}, M. Gronau^{62,§}, Y. Grossman^{15,§}, F. K. Guo^{45,134,§}, U. Haisch^{150,11,§}, C. Hanhart^{1,§}, S. Hashimoto^{30,26,§}, S. Hirose^{89,§}, J. Hisano^{89,90,§}, L. Hofer^{17,§}, M. Hoferichter^{168,§}, W. S. Hou^{92,§}, T. Huber^{123,§}, T. Hurth^{63,§}, S. Jaeger^{159,§}, S. Jahn^{83,§}, M. Jamin^{126,§}, J. Jones^{104,§}, M. Jung^{113,§}, A. L. Kagan^{135,§}, F. Kahlhoefer^{1,§}, J. F. Kamenik^{109,141,§}, T. Kaneko^{30,26,§}, Y. Kiyo^{64,§}, A. Kokulu^{141,140,§}, N. Kosnik^{109,141,§}, A. S. Kronfeld^{20,§}, Z. Ligeti^{19,§}, H. Logan^{7,§}, C. D. Lu^{41,§}, V. Lubitz^{153,§}, F. Mahmoudi^{142,§}, K. Maltman^{173,§}, S. Mishima^{30,§}, M. Misiak^{166,§}, K. Moats^{7,§}, B. Moussallam^{74,§}, A. Nefediev^{39,88,77,§}, U. Nierste^{51,§}, D. Nomura^{30,§}, N. Offen^{50,§}, S. L. Olsen^{13,§}, E. Passemar^{37,118,§}, A. Paul^{16,31,§}, G. Paz^{170,§}, A. A. Petrov^{170,§}, A. Pich^{164,§}, A. D. Polosa^{58,§}, J. Pradler^{40,§}, S. Prelovsek^{109,141,50,§}, M. Procura^{123,§}, G. Ricciardi^{154,§}, D. J. Robinson^{132,19,§}, P. Roig^{9,§}, J. Rosiek^{166,§}, S. Schacht^{60,15,§}, K. Schmidt-Hoberg^{16,§}, J. Schwichtenberg^{51,§}, S. R. Sharpe^{167,§}, J. Shigemitsu^{117,§}, D. Shih^{105,§}, N. Shimizu^{162,§}, Y. Shimizu^{69,§}, L. Silvestrini^{58,§}, S. Simula^{59,§}, C. Smith^{76,§}, P. Stoffer^{131,§}, D. Straub^{113,§}, F. J. Tackmann^{16,§}, M. Tanaka^{98,§}, A. Tayduganov^{112,§}, G. Tetlalmatzi-Xolocotzi^{9,§}, T. Teubner^{140,§}, A. Vairo^{114,§}, D. van Dyk^{114,§}, J. Virto^{82,114,§}, Z. Was^{93,§}, R. Watanabe^{147,§}, I. Watson^{155,§}, S. Westhoff^{39,§}, J. Zupan^{135,§}, R. Zwicky^{36,§}, F. Abudinen^{93,†}, I. Adachi^{30,26,†}, K. Adamczyk^{29,†}, P. Ahlburg^{29,†}, H. Aihara^{162,†}, A. Aloisio^{54,†}, L. Andricek^{84,†}, N. Anh Ky^{44,†}, M. Arndt^{29,†}, D. M. Asner^{54,†}, H. Atmacan^{158,†}, T. Aushev^{87,†}, V. Aushev^{104,†}, R. Ayad^{161,†}, T. Azizi^{111,†}, S. Baehr^{48,†}, S. Bahinipati^{33,†}, P. Bambade^{75,†}, Y. Ban^{103,†}, M. Barrett^{170,†}, J. Baudot^{97,†}, P. Behara^{36,†}, K. Belous^{38,†}, M. Bener^{78,†}, J. Bennett^{84,†}, M. Berger^{40,†}, E. Bernieri^{59,†}, F. U. Bernlochner^{48,†}, M. Bessner^{38,†}, D. Besson^{88,†}, S. Bettarini^{27,†}, V. Bhardwaj^{32,†}, B. Bhuyan^{34,†}, T. Bilka^{104,†}, S. Bilmin^{86,†}, S. Bilokin^{94,†}, G. Bonvicini^{170,†}, A. Bozek^{93,†}, M. Bračko^{144,109,†}, P. Branchini^{59,†}, N. Braun^{48,†}, R. A. Briere^{84,†}, T. E. Browder^{18,†}, L. Burmistrov^{75,†}, S. Bussino^{94,†}, L. Cao^{48,†}, G. Caria^{45,†}, G. Casarosa^{74,†}, C. Cecchi^{66,†}, D. Cervenkov^{10,†}, M.-C. Chang^{22,†}, P. Chang^{92,†}, R. Cheaib^{146,†}, V. Chekelian^{83,†}, Y. Chen^{154,†}, B. G. Cheon^{28,†}, K. Chilikin^{77,†}, K. Cho^{70,†}, J. Choi^{14,†}, S.-K. Choi^{27,†}, S. Choudhury^{35,†}, D. Cinabro^{170,†}, L. M. Cremaldi^{146,†}, D. Cuesta^{47,†}, S. Cunliffe^{164,†}, N. Dash^{33,†}, E. de la Cruz Burelo^{94,†}, E. de Lucia^{52,†}, G. De Nardo^{54,†}, M. De Nuccio^{164,†}, G. De Pietro^{59,†}, A. De Yta Hernandez^{24,†}, B. Deschamps^{29,†}, M. Destefanis^{60,†}, S. Dey^{116,†}, F. Di Capua^{24,†}, S. Di Carlo^{75,†}, J. Dingfelder^{129,†}, Z. Dolezal^{104,†}, I. Dominguez Jiménez^{25,†}, T. V. Dong^{30,26,†}, D. Dosssett^{145,†}, S. Duell^{129,†}, S. Eidelman^{5,96,77,†},

[†]Editor.

[‡]Belle II Collaborator.

[§]Theory or external contributing author.

Great outcomes

Constraint on the matter-antimatter symmetry-violating phase in neutrino oscillations

T2K Collaboration · K. Abe · Show All(335)

Oct 9, 2019

10 pages

Published in: *Nature* 580 (2020) 7803, 339-344, *Nature* 583 (2020) 7814, E16 (erratum)

Published: Jun 18, 2020

e-Print: 1910.03887 [hep-ex]

DOI: 10.1038/s41586-020-2177-0, 10.1038/s41586-020-2415-5 (erratum)

PDG: δ , CP violating phase · Show All(3)

Experiments: T2K

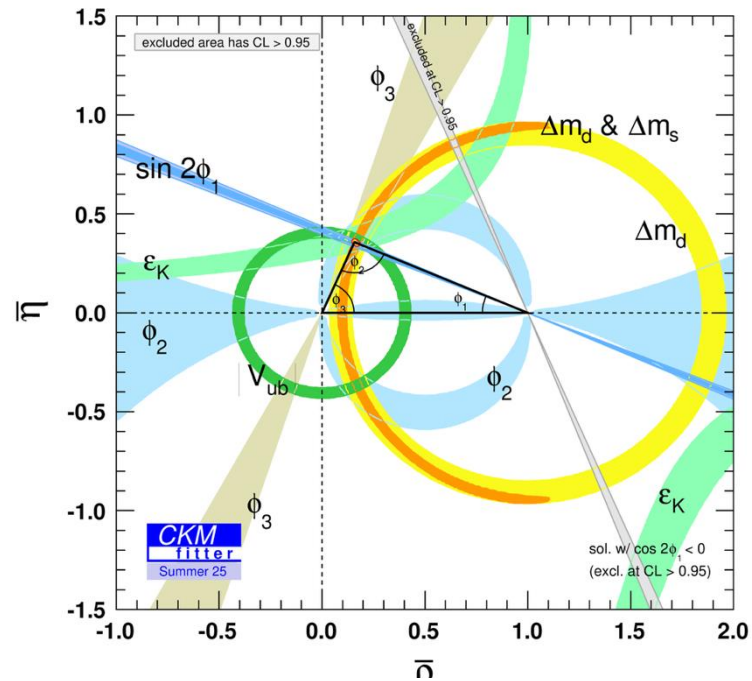
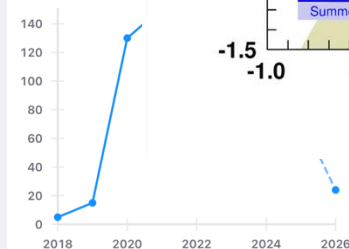
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Abstract: (Springer)

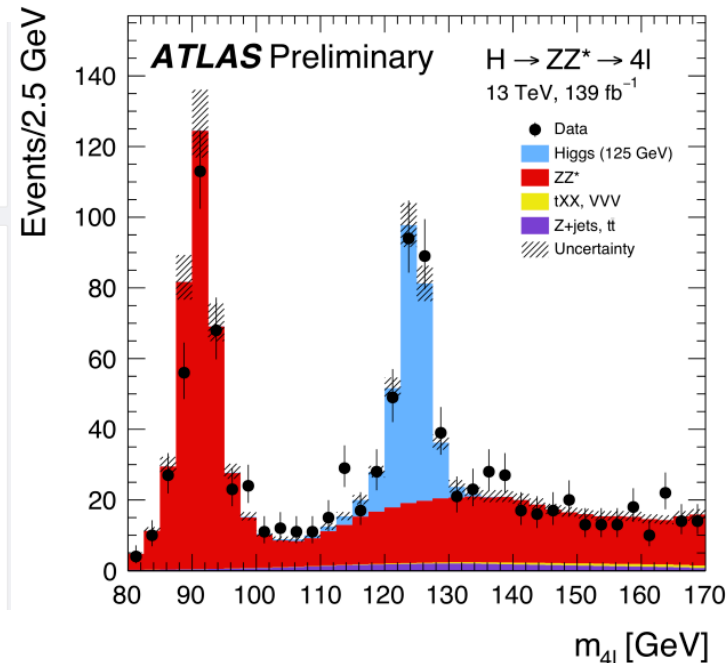
The charge-conjugation and parity-reversal (CP) symmetry of fundamental particles is a symmetry between matter and antimatter. Violation of this CP symmetry was first observed in 1964¹, and CP violation in the weak interactions of quarks was soon established². Sakharov proposed³ that CP violation is necessary to explain the observed imbalance of matter and antimatter abundance in the Universe. However, CP violation in quarks is too small to support this explanation. So far, CP violation has not been observed in non-quark elementary particle systems. It has been shown that CP violation in leptons could generate the matter-antimatter disparity through a process called leptogenesis⁴. Leptonic mixing, which appears in the standard model's charged current interactions^{5,6}, provides a potential source of CP violation through a complex phase δ_{CP} , which is required by some theoretical models of leptogenesis^{7,8,9}. This CP violation can be measured in muon neutrino to electron neutrino oscillations and the corresponding antineutrino oscillations, which are experimentally accessible using accelerator-produced beams as established by the Tokai-to-Kamioka (T2K) and NOvA experiments^{10,11}. Until now, the value of δ_{CP} has not been substantially constrained by neutrino oscillation experiments. Here we report a measurement using long-baseline neutrino and antineutrino oscillations observed by the T2K experiment that shows a large increase in the neutrino oscillation probability, excluding values of δ_{CP} that result in a large increase in the observed antineutrino oscillation probability at three standard deviations (3σ). The 3σ confidence interval for δ_{CP} , which is cyclic and repeats every 2π , is $[-3.41, -0.03]$ for the so-called normal mass ordering and $[-2.54, -0.32]$ for the inverted mass ordering. Our results indicate CP violation in leptons and our method enables sensitive searches for matter-antimatter asymmetry in neutrino oscillations using accelerator-produced neutrino beams. Future measurements with larger datasets will test whether leptonic CP violation is larger than the CP violation in quarks.

Citations per year

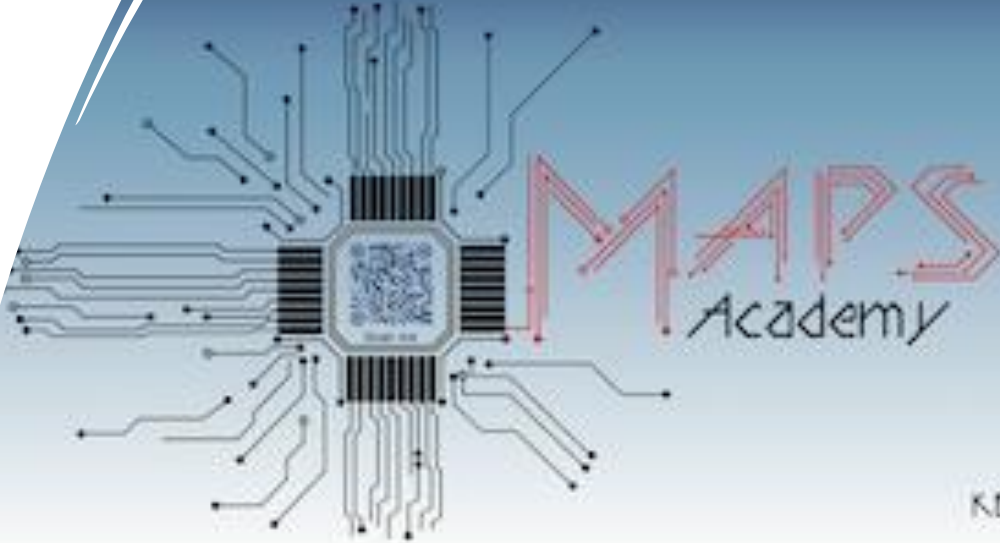


THE INTERNATIONAL LINEAR COLLIDER

TECHNICAL DESIGN REPORT | VOLUME 1: EXECUTIVE SUMMARY



Emerging new direction



23
10
30
MAY
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KEK, TSURUBA, JAPAN

**Training on simulation,
design & testing of monolithic active pixel sensors**

2 half-days of lectures :
Introduction to MAPS technology and performance,
Applications in HEP and other domains

6 days of hands-on :
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