

APPENDIX A: ILC250 PROJECT COSTS

	TDR: ILC500 [B ILCU] (Estimated by GDE)	ILC250 [B ILCU] (Estimated by LCC)	Conversion to: [B JPY] (Reported to MEXT/SCJ)
Accelerator Construction: sum	n/a	n/a	635.0 ~ 702.8
Value: sub-sum	7.98	4.78 ~ 5.26	515.2 ~ 583.0
Tunnel & building	1.46	1.01	111.0 ~ 129.0
Accelerator & utility	6.52	3.77 ~ 4.24	404.2 ~ 454.0
Labor: Human Resource	22.9 M person-hours (13.5 K person-years)	17.2 M person-hours (10.1 K person-years)	119.8
Detector Construction: sum	n/a	n/a	100.5
Value: Detectors (SiD+ILD)	0.315+0.392	0.315+0.392	76.6
Labor: Human Resource (SiD + ILD)	748+1,400 person-years	748+1,400 person-years	23.9
Operation/year (Acc.) : sum	n/a	n/a	36.6 ~ 39.2
Value: Utilities/Maintenance	0.390	0.290 ~ 0.316	29.0 ~ 31.6
Labor: Human Resource	850 FTE	638 FTE	7.6
Others (Acc. Preparation)	n/a	n/a	23.3
Uncertainty	25%	25%	25%
Contingency	10%	10%	10%
Decommission	n/a	n/a	Equiv. to 2-year op. cost

http://www.mext.go.jp/component/b_menu/shingi/toushin/_icsFiles/afieldfile/2018/09/20/1409220_2_1.pdf

FIG. 7. Costs of the ILC250 project in ILCU as evaluated by the Linear Collider Collaboration (LCC), converted to JPY and re-evaluated by KEK, and summarised in the MEXT ILC Advisory Panel report, in July, 2018.

The above summary is based on the information given in:

1. *ILC-TDR* (note: it is a reference for the ILC500 in B ILCU): <http://www.linearcollider.org/ILC/Publications/Technical-Design-Report>;
2. *The International Linear Collider Machine Staging Report 2017* (note: it is a reference for ILC250 cost in B ILCU): arXiv:1711.00568[hep-ex, <https://arxiv.org/abs/1711.00568>;
3. *Summary of the ILC Advisory Panel's discussions to date after Revision* (conversion to JYen). Report by the International Linear Collider (ILC) Advisory Panel, MEXT, Japan on July 4, 2018: http://www.mext.go.jp/component/b_menu/shingi/toushin/_icsFiles/afieldfile/2018/09/20/1409220_2_1.pdf.

The ILC currency unit (ILCU) is defined as 1 US Dollar (USD) in Jan., 2012. The cost conversion to Japanese Yen (JPY) has assumed that 1 Euro=115 JPY and 1 USD=100 JPY. The accelerator labor-estimate unit of person-hours may be simply converted to person-years by using a factor of 1,700 working-hours per year.

The total value cost for the 250 GeV accelerator construction was estimated to be in a range of 4.78-5.26 B ILCU and has been converted to 515.2-583.0 B JPY, by taking into account various effects of SCRF cost-reduction R&D, smaller mass production because of ILC500 to ILC250, and time-dependent variations specially in tunnelling and building works.

These numbers include the cost for civil engineering (tunnelling, building etc.) and the laboratory. Costs not included are land acquisition, living environment for visiting researchers, access roads, groundwater handling, energy service enterprise for power transmission, part of low power voltage supplies and physic-analysis computer centre. The cost premium to cover the project cost with 85% instead of 50% confidence level (loosely speaking, the 1 sigma uncertainty of the cost estimate) has been estimated to be 25% of the estimated cost.

APPENDIX B: DEFINITION OF THE COMMUNITY

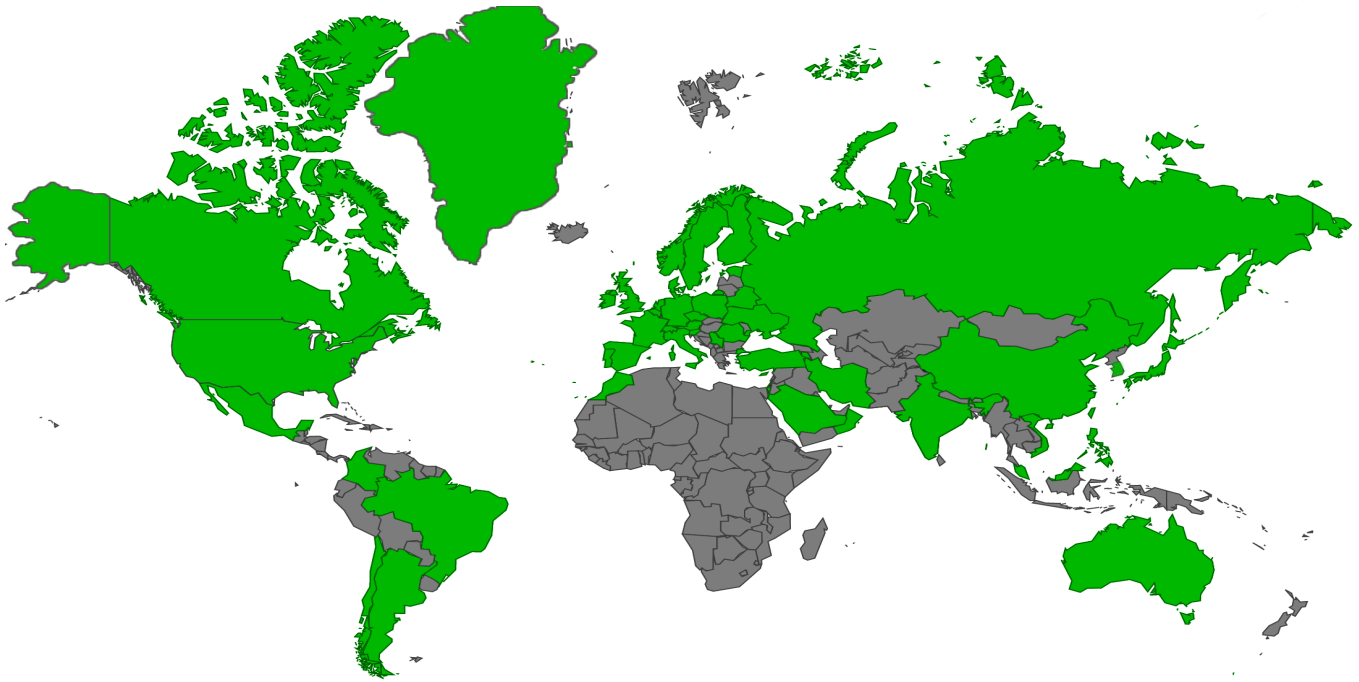


FIG. 8. World wide map distribution of signatories supporting the ILC Technical Design Report.

List of signatories of the ILC Technical Design Report

Country	Institutes	Signatories	Country	Institutes	Signatories
Japan	66	506	Denmark	1	7
United States of America	75	396	Estonia	2	6
Germany	24	303	Romania	1	5
France	22	243	Australia	2	4
Spain	19	163	Turkey	3	4
United Kingdom	23	150	Vietnam	2	4
China	7	99	Armenia	2	3
India	21	64	Cyprus	1	3
Switzerland	5	62	Finland	2	3
Italy	19	56	Iran	1	3
Poland	9	45	Morocco	1	3
Republic of Korea	14	41	Norway	2	3
Russia	8	38	Serbia	1	3
Taiwan	6	36	Slovenia	3	3
Canada	11	25	Chile	1	2
Czech Republic	3	20	Mexico	2	2
Netherlands	3	19	Portugal	1	2
Austria	2	13	Saudi Arabia	2	2
Belarus	3	11	Argentina	1	1
Belgium	4	10	Colombia	1	1
Israel	2	9	Ireland	1	1
Sweden	2	8	Malaysia	1	1
Ukraine	2	8	Oman	1	1
Brazil	6	7	Philippines	1	1

FIG. 9. Detailed list of signatories of the ILC Technical Design Report covering 2400 signatories, 48 countries and 392 Institutes/Universities.

APPENDIX C: LIST OF SUPPORTING DOCUMENTS

- ILC TDR documents;
- ILC general overview, being specifically produced for the European Strategy Process;
- European ILC Preparation Plan (EIPP), produced under the E-JADE project;
- Linear collider Detectors R&D Liaison Report;
- Green ILC project: reports and web page;
- Letter from the KEKs ILC Planning Office.

Supporting documents web page:

<https://ilchome.web.cern.ch/content/ilc-european-strategy-document>

APPENDIX D: GLOSSARY

- **AAA:** The Japanese Advanced Accelerator Association promoting science and technology (<http://aaa-sentan.org/en/association/index.html>).
- **AIDA:** Advanced European Infrastructures for Detectors at Accelerators. AIDA was funded by the EU under FP7 (<https://aida-old.web.cern.ch/aida-old/index.html>).
- **AIDA-2020:** Advanced European Infrastructures for Detectors at Accelerators. The successor of AIDA; AIDA-2020 is funded by the EU under Horizon2020 (<http://aida2020.web.cern.ch/>).
- **CALICE Collaboration:** R&D group of more than 280 physicists and engineers from around the world, working together to develop a high granularity calorimeter system optimised for the particle flow measurement of multi-jet final states at the ILC running, with centre-of-mass energy between 90 GeV and 1 TeV (<https://twiki.cern.ch/twiki/bin/view/CALICE/WebHome>).
- **CARE:** Coordinated Accelerator Research in Europe. CARE was funded by the EU under the FP6 programme.
- **E-JADE:** The Europe-Japan Accelerator Development Exchange Programme. E-JADE is a Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) action, funded by the EU under Horizon2020 (<https://www.e-jade.eu/>).
- **EUDET:** Detector R&D towards the International Linear Collider. EUDET was funded by the EU under the FP6 programme (<https://www.eudet.org/>).
- **European XFEL:** The European X-Ray Free-Electron Laser Facility (European XFEL) at DESY (Hamburg, Germany) (<https://www.xfel.eu>).
- **EUROTeV:** European Design Study Towards a Global TeV Linear Collider. EUROTeV was funded by the EU under the FP6 programme (<https://www.eurotev.org/>).
- **ICFA:** International Committee for Future Accelerators (<http://icfa.fnal.gov/>).
- **ILC-HiGrade:** International Linear Collider and High Gradient Superconducting RF-Cavities. ILC-HiGrade was funded by the EU under the FP7 programme (<https://www.ilc-higrade.eu/>).
- **JAHEP:** Japanese Association of High Energy Physics.
- **Japanese National DIET:** The National Diet is Japan's bicameral legislature. It is composed of a lower house called the House of Representatives, and an upper house, called the House of Councillors.
- **LCLS-II:** The hard X-ray free-electron laser at SLAC (Stanford, USA) (<https://portal.slac.stanford.edu/sites/lcls-public/lcls-ii/Pages/default.aspx>).
- **MEXT:** Ministry of Education, Culture, Sports, Science and Technology (<http://www.mext.go.jp/en/>).
- **SHINE:** Hard X-Ray free electron laser facility in Shanghai.