

Crucial external collaborations

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CLIC ACE
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Country	Institutes	Activities	Collaboration lead coordinator	Collaboration participants		Agreement or framework
				at Institute	at CERN	
China	CAS	High-power X-band components	Fengli Zao			payment basis
	Tsinghua University	Choke Mode accelerating structure design fabrication and test	Huaibi Chen	Huang Wenhui Takayuki Saeki	PhD students	meeting at EPAC, XB08
Finland	HIP	Breakdown simulation	Kenneth Osterberg	Kai Nordlund, Flyura Djurabekova, Aarne Pohjonen	Helga Timko	CLIC/CTF3 MoU signed, FP7, HIP internal funding, PhD supervision
	VTT	Module design	Kenneth Osterberg	Jouni Hopana	Risto Nousiainen	Nordu CLIC FP7, EUCARD, WP 9.2
		Precision manufacture	Kimmo Makela	Jouni Hopana	Risto Nousiainen	Nordu CLIC FP7, EUCARD, WP 9.3
	Finpro	Structure industrialisation and mass production	Pietari Kauttu			FP7 SME
	Tampere Un. Of Technology	Management tools	Saku Makinen		Tiia Uusimaeki	
France	CEA/IRFU	TBTS module, wakefield monitors	Franck Peauger			CLIC/CTF3, French exceptional contribution
	Thales	rf absorbers	Christophe Lievin			Informal
Germany	Ruhr University of Bochum	Pulsed surface heating fatigue studies	Gunther Eggeler		Markus Aicheler	PhD program agreement
	MPI, IPP Greifswald	Breakdown simulation	Ralf Schneider	Konstantin Matyash		Informal
	Warner Bruns	Rf simulation, GDFDL	Warner Bruns			
	RWTH Aachen University	Breakdown diagnostics	Achim Stahl		Jan Kovermann	PhD supervision
Greece	Petras University	Non-metallic material characterisation	Evangelos Gazis		Nick Gazis	Under discussion - aim for CLIC/CTF3
India	DAE	PETS manufacture	Vinod Sahnii	GP. Srivastava		CLIC/CTF3 MoU signed and addendum
Italy	Frascati, INFN	PETS manufacture	Andrea Ghigo	Bruno Spadaro		CLIC/CTF3 MoU signed and addendum
	Trieste	X-band structure for X-FEL	Gerardo D'Auria	Defa Wang		Under discussion
	TERA Foundation	X-band structure and wg network design for C linac	Ugo Amaldi		Rolf Wegner	TERA foundation/CERN collaboration agreement, addendum needed
Japan	KEK	X-band structure design, fabrication and testing	Toshi Higo	Yasuo Higashi, Shuji Matsumoto, Nobu Toge, Kazue Yokoyama		CERN agreement ICA-JP-0103 - Addendum 2. Not CLIC/CTF3 signatory
Norway	NTNU department of physics	Breakdown studies	Morten Kildemo		Anita Hansen	

Pakistan	NCP	TBTS tanks	Azhar Nawar		Nasir Abbas	CERN protocol P079/LHC (PAEC/CERN/2006)
Russia	Dubna - JINR	Support for module integration, rf structure design and software for computer-controlled operation	Alexander Karlov		Alexander Samoshkin, Dmitry Gudkov, Maria Filippova	k-contract in preparation P072/LHC/A1 CLIC/CTF3 MoU signed and addendum
Spain	CIEMAT	TBTS module, rf absorbers	Fernando Toral	Laura Sanchez-Garcia David Carrillo		CLIC/CTF3 MoU, FP7
	IFIC	X-band structures for medical applications	Angeles Faus-Golfe	J. V. Civera, C. Blanch	Silvia Verdu	CLIC/TERA
Sweden	Uppsala	TBTS module	Tord Ekelof	Volker Ziemann	Roger Ruber	Nordu CLIC CLIC/CTF3 MoU signed and addendum, FP7
Switzerland	PSI	X-band structure for X-FEL	Micha Dehler	Jean-Yves Raguin, Antonio Falone, Citterio Alessandro		Under preparation
		Module girder design	Johan Wickstrom			Under approval
	EPFL	damped X-band rf structures	Lenny Rifkin		Tatiana Pieloni	Under preparation
UK	Cockcroft	Structure design	Roger Jones	Vasim Khan	Alessandro d'Elia	Cockcroft/CERN MoU, FP7, CLIC/CTF3?
Ukraine	IAP, Sumy	Breakdown diagnostics and simulation	Serhiy Mordyk			CLIC/CTF3 MoU signed, STCU proposal submitted
USA	SNAL	X-band structure design, fabrication and testing	Sami Tantawi, Kwok Ko	Juwen Wang, Chris Adolphsen, Faya Wang, Lisa Laurent, Zenghai Li, Valery Dolgashev, Arno Candel		CERN collaboration agreement K1451/AB
	Fermilab	BPM studies	Manfred Wendt	Nikolay SolyaK		informal
		US high gradient collaboration	Sami Tantawi	Gregory Nusinovich Jim Norem		<i>CERN has observer status</i>
Others	ESA	Emitted current simulation				
	NorduCLIC	A. Design and radiofrequency (RF) simulations B. Fabrication in Nordic industry and Nordic university workshops and tests in CTF3 at CERN of three new acceleration cavities C. Design, fabrication and operation in the CLIC Experimental Area at CERN of optical, spectroscopic and RF instrumentation for the stand-alone test-stand	Tord Ekelof	Kenneth Osterberg Steinar Stapnes		<i>Application in preparation</i>
	ILC	Module design system integration Project tools Module cost	Marc Ross	John Cawardine Vic Kucher Peter Garbincius		CLIC/ILC working groups

SLAC

- Testing in NLCTA and ASTA – Infrastructure, high-power rf system, control and experimental software, experience and knowledge of group. Supplies around $\frac{3}{4}$ of our rf pulses... **Absolutely crucial** and will remain so for the planned future.
- X-band klystron – Only high, 50 Hz, rep rate high-power X-band power source currently planned for CERN. Hence **absolutely crucial**.
- ACG codes and computational infrastructure – Currently only serious cross check of our GDFDL computations in PETS for example. Appears to be code of choice for two-beam simulation and development of high-power rf simulations like dark currents and eventually breakdown currents. Currently important and likely to move into **crucial**. We have a new fellow, Olexei 3, who we hope will become proficient in the codes.
- Structure fabrication – Brazing furnace and heat treatment **crucial** for KEK fabrication. No supply of full structures, no milling capability, but important help for supply of knowledge and C10s.

KEK

- NEXTEF - Infrastructure, high-power rf system, control and experimental software, experience and knowledge of group. Supplies around 1/4 of our rf pulses... **Absolutely crucial** and will remain so for the planned future.
- Structure fabrication – Currently supplying the only successful test structures of CLIC program. Only alternative to VDL for high-precision-frontier structures. Hence **absolutely crucial**. CERN capability should be fully qualified within coming months to half year but second would still supply credibility, capacity, exchange of ideas etc.

HIP, Finland

Breakdown theory and simulation – They have developed state-of-the-art atom level and surface physics tools, applied themselves to our problem and now understand many aspects of breakdown better than we do. We have not yet met any other relevant group which comes remotely close to their level of competence. Hence **absolutely crucial** for development of this part of the study.

VDL

Our only fully qualified supplier of high precision parts but good progress on two other suppliers.

Warner Bruns

GDFDL is a daily workhorse for us plus only code where our feedback is implemented.

GYCOM

Only commercial rf supplier of complex overmoded components.