TR HEP IN COLLIDER EXPERIMENTS

Compiled by

O. Cakir and I. Dumanoglu

RECFA Meeting, Istanbul, 6-7 October 2017

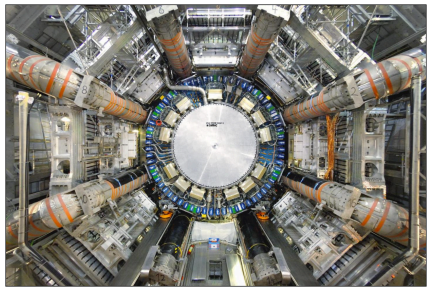
OUTLINE

- TR Participation in running collider experiments
  - ATLAS
  - CMS
  - ALICE
  - BES III
- Participation in future collider experiments
  - CLIC
  - LHeC
  - FCC
- Summary and conclusions

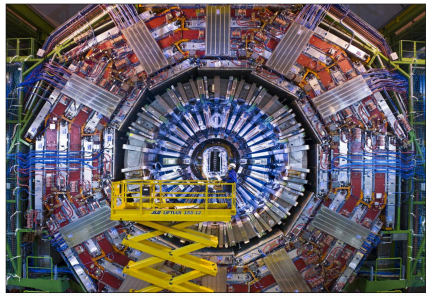
TR PARTICIPATION IN COLLIDER EXPERIMENTS

- Turkish physicists have participated in a number of CERN experiments. They are active in collider experiments ALICE, ATLAS, CMS, and are also present in BES III.
- In CMS, Turkey contributes to data acquisition, trigger and mechanics for the forward HCAL, while the contribution to ATLAS includes mainly software and testing the TRT detector, and that for ALICE is to the computing. For all three high energy experiments, Turkey is also contributing to the physics analysis.
- A team of Turkish physicists is engaged in simulations and theoretical work connected with CLIC, LHeC and FCC. Turkey has also provided operators for the CTF3.

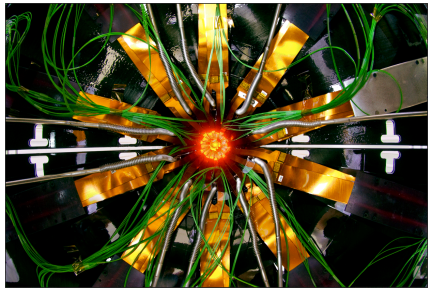
ATLAS



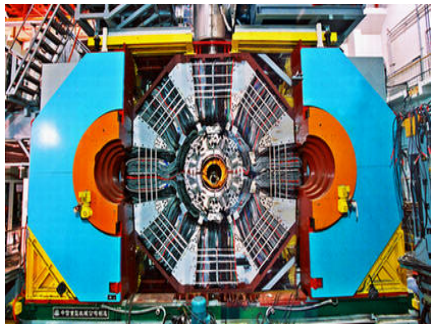
CMS

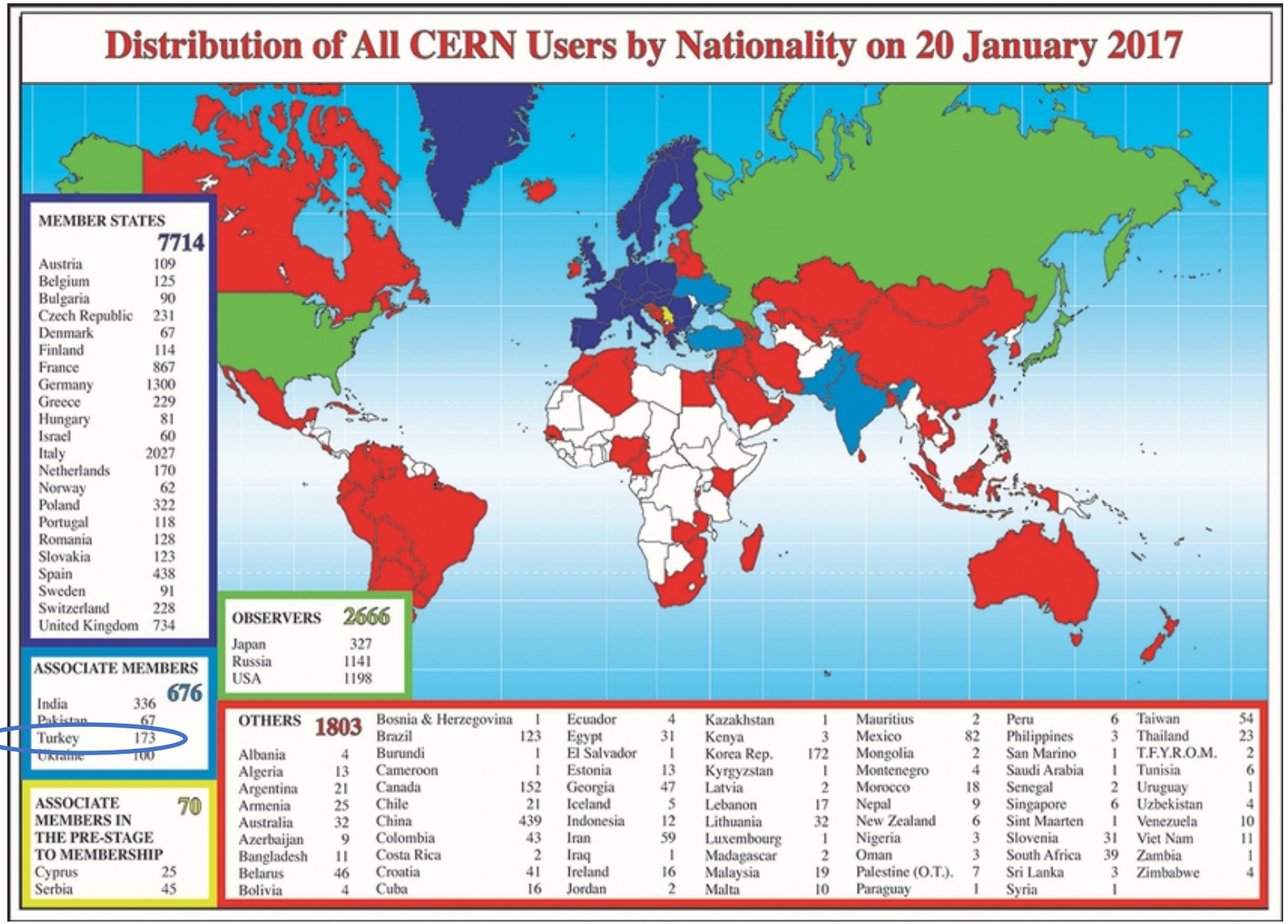


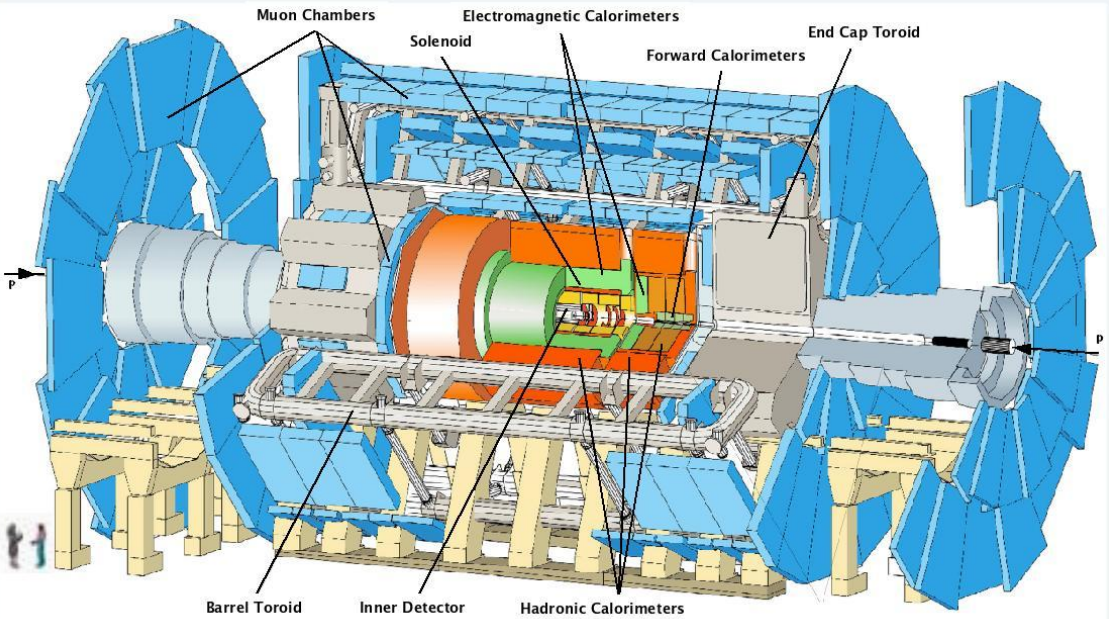
ALICE



BES III

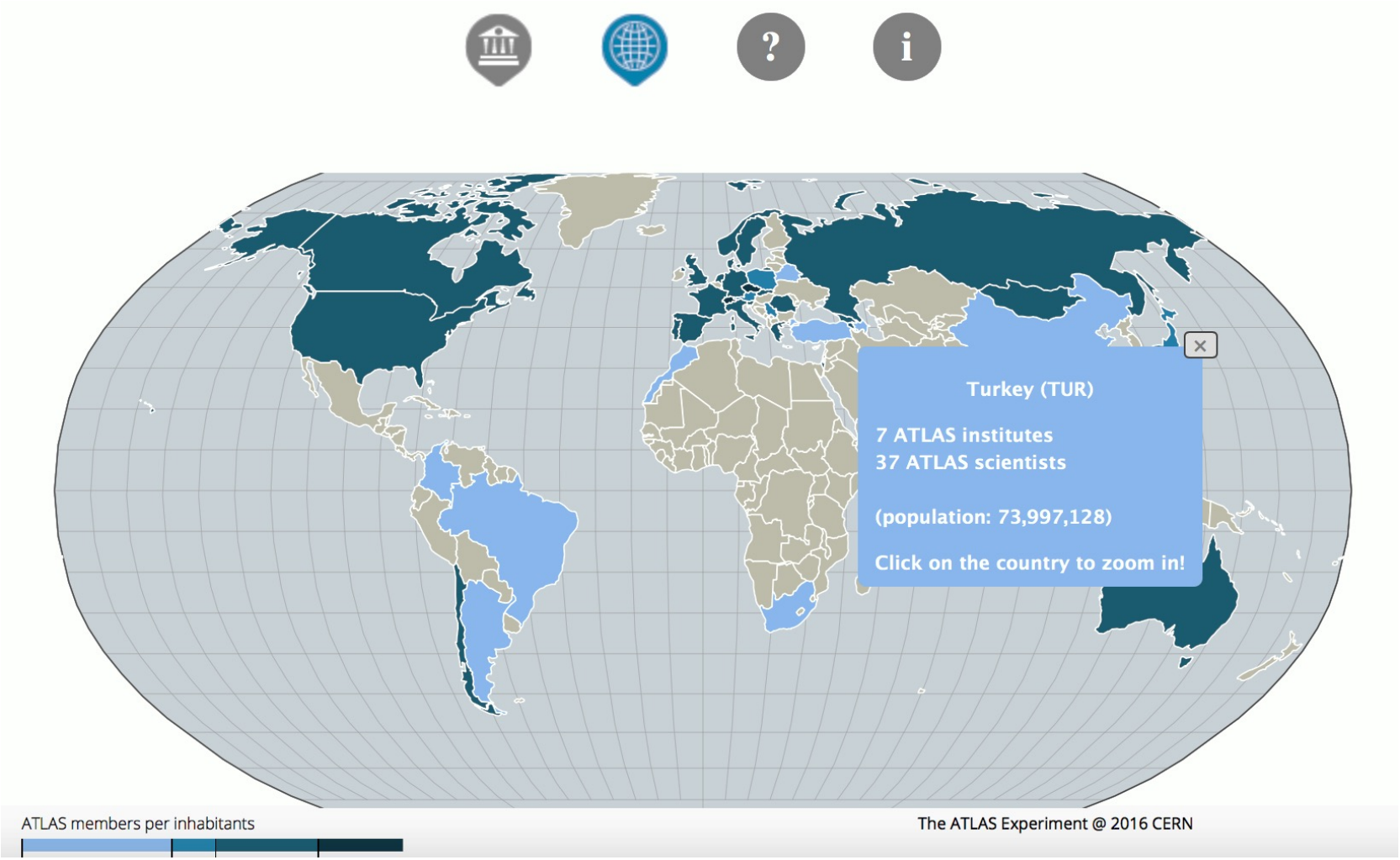



Distribution of All CERN Users by Nationality on 20 January 2017
MEMBER STATES 7714
Austria 109
Belgium 125
Bulgaria 90
Czech Republic 231
Denmark 67
Finland 114
France 867
Germany 1300
Greece 229
Hungary 81
Israel 60
Italy 2027
Netherlands 170
Norway 62
Poland 322
Portugal 118
Romania 128
Slovakia 123
Spain 438
Sweden 91
Switzerland 228
United Kingdom 734
ASSOCIATE MEMBERS 676
India 336
Pakistan 67
Turkey 173
Ukraine 100
ASSOCIATE MEMBERS IN THE PRE-STAGE TO MEMBERSHIP 70
Cyprus 25
Serbia 45
OBSERVERS 2666
Japan 327
Russia 1141
USA 1198
OTHERS 1803
Albania 4
Algeria 13
Argentina 21
Armenia 25
Australia 32
Azerbaijan 9
Bangladesh 11
Belarus 46
Bolivia 4
Bosnia & Herzegovina 1
Brazil 123
Burundi 1
Cameroon 1
Canada 152
Chile 21
China 439
Colombia 43
Costa Rica 2
Croatia 41
Cuba 16
Ecuador 4
Egypt 31
El Salvador 1
Estonia 13
Georgia 47
Iceland 5
Indonesia 12
Iran 59
Iraq 1
Ireland 16
Jordan 2
Kazakhstan 1
Kenya 3
Korea Rep. 172
Kyrgyzstan 1
Latvia 2
Lebanon 17
Lithuania 32
Luxembourg 1
Madagascar 2
Malaysia 19
Malta 10
Mauritius 2
Mexico 82
Mongolia 2
Montenegro 4
Morocco 18
Nepal 9
New Zealand 6
Nigeria 3
Oman 3
Palestine (O.T.). 7
Paraguay 1
Peru 6
Philippines 3
San Marino 1
Saudi Arabia 1
Senegal 2
Singapore 6
Sint Maarten 1
Slovenia 31
South Africa 39
Sri Lanka 3
Syria 1
Taiwan 54
Thailand 23
T.F.Y.R.O.M. 2
Tunisia 6
Uruguay 1
Uzbekistan 4
Venezuela 10
Viet Nam 11
Zambia 1
Zimbabwe 4



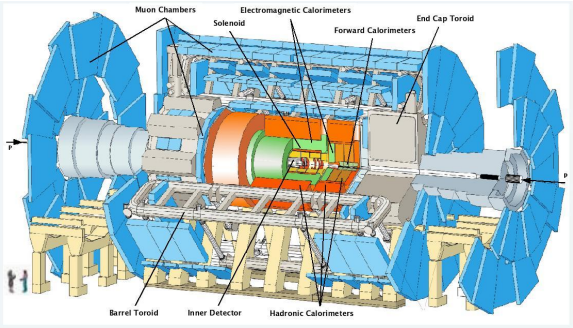
TR GROUPS IN ATLAS

TR ATLAS INSTITUTES



TR ATLAS - I

- The first institution to join ATLAS was **Bogazici University**.
  - It has been a member of the ATLAS Collaboration since 1994.



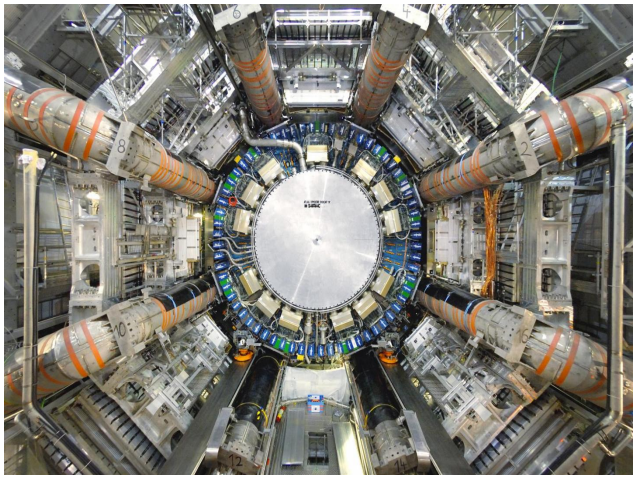
Bogazici joined ATLAS under the leadership of Prof. Dr. Engin ARIK and participated in the studies of the ATLAS-TDAQ (Trigger and Data Acquisition) collaboration since its membership.

Bogazici team members participated in the studies of the ATLAS-MUON group as well.

In 1999 Bogazici team joined the ATLAS-ID-TRT (Inner Detector – Transition Radiation Tracker) collaboration.

TR ATLAS - II

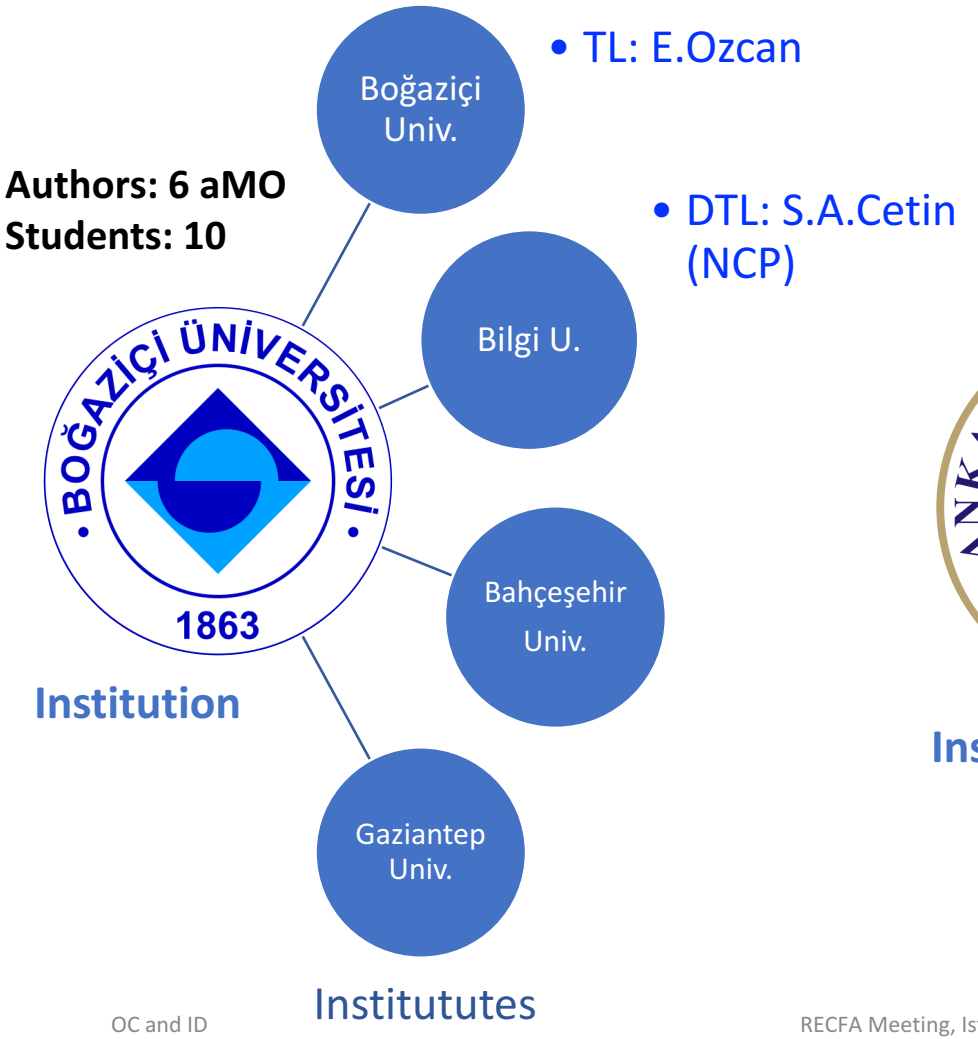
- The second institution to join ATLAS was **Ankara University**.
  - It has been a member of the ATLAS Collaboration since 1998.
  - Some members from Ankara University had already joined ATLAS through Bogazici earlier.
  - Ankara team joined TDAQ collaboration as well.
  - This team also participated to ATLAS computing tasks.

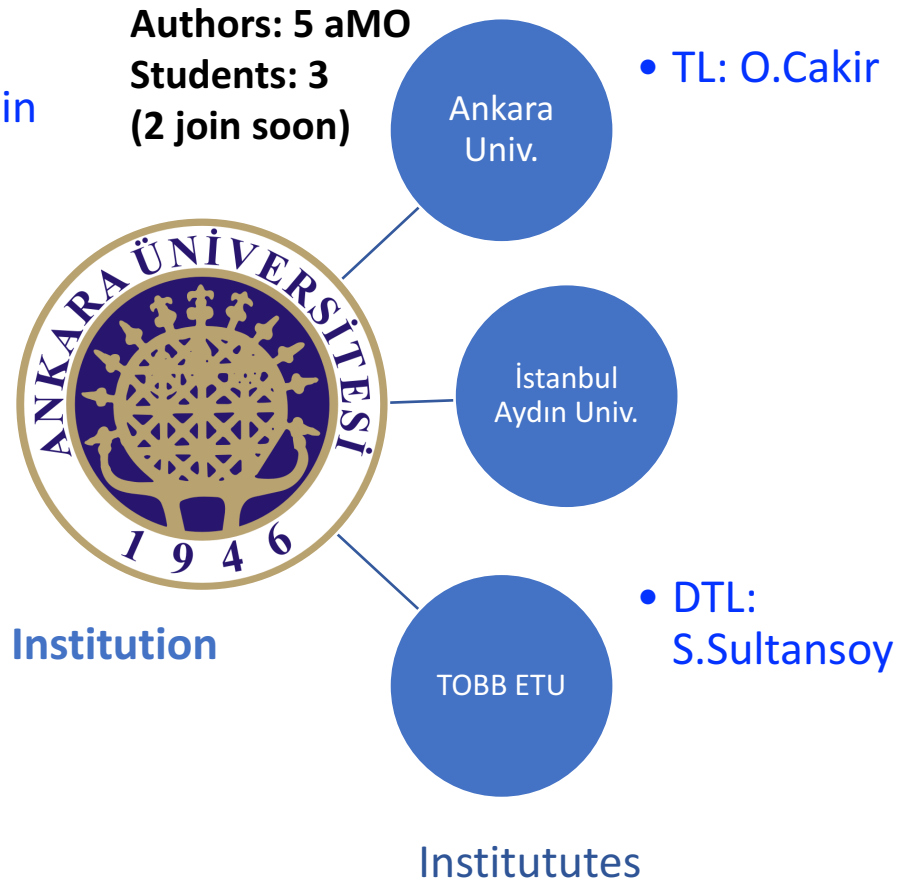


ATLAS detector inside

CLUSTER'S COMPOSITION AND MANAGEMENT

Both Universities formed clusters in time





INVOLVEMENTS WITHIN ATLAS

- **Contributions in Operation Tasks:**

ACR, ADCoS, Muon DQ,
Muon RPC, TRT offline
and qualification tasks (QT)

Computing/Software	General Tasks	ADCoS Senior shifts
Computing/Software	General Tasks	ADCoS Trainee shifts
Computing/Software	TRT	TRT Detector Response Simulation
Computing/Software	TRT	TRT Software Maintenance & Release Checking
Computing/Software	TRT	TRT Offline Commisioning Performance and Optimisation
Data Preparation	TRT	TRT Offline Data Quality monitoring and support
Data Preparation	TRT	TRT Offline Shifter
Data Preparation	TRT	TRT Offline Expert Shifter
Data Preparation	General Tasks	Online Shadow DQ Shifter in ACR

- **Institutional Responsibilities (operational):**

TRT Offline Monitoring
TRT Data Quality

- **Detector Activities:**

TRT Performance Studies
TDAQ: B-jet triggers, DCS
Phase II upgrade: Barrel Inner RPC (2 students doing QT + 1 engineer)

- **Physics Analysis:**

Exotics Physics WG: HQT subgroup, new heavy quark searches (vector-like, E6, FCNC), Compositeness searches (color octet fermions, leptoquarks)
B-Physics WG: Ξ_b^- and $B^{+/-}$ searches

SUPPORT FROM NATIONAL PROJECTS

Projects:

- Funding by TUBITAK since 1994 with serious cuts after 2000.
- TAEK took over as FA since 2006:
  - 2006-2011: CERN-A5.H2P101-7
  - 2011-2015: 2011TAEKCERN-A5.H2.P1.01-19
  - 2016-2017: 2016TAEK(CERN)A5.H6.F2.14

  } with budget: 600-700 kTL
- All teams supported through a single umbrella project funded by TAEK (Project Leader: Serkant Ali Cetin)
  - Number of seniors counted for M&O-A: 2016: 12 and 2017: 11
  - Our projection for 2018 M&O: 15 (8 submitted by TAEK)

Within TR ATLAS, groups always applied for funding in a single (umbrella) project due to the efficient coordination and well established synchronization among various institutes.

PHYSICS STUDIES WITHIN EXOTICS GROUP

TWiki > AtlasProtected Web > Run2VLQ1LeptonSingleVLQ (2017-02-13, JanetDietrich)

Twiki Page for the Run2 single lepton single production Analysis Efforts

Run2VLQ1LeptonSingleVLQ

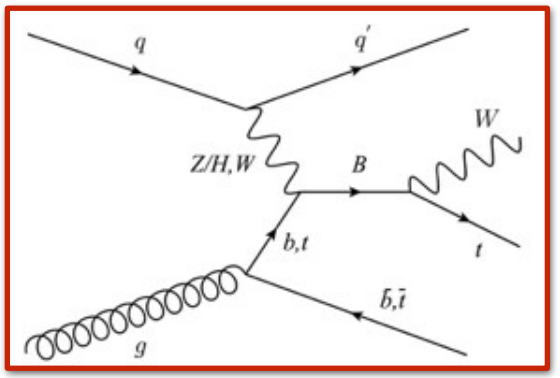
- Introduction
- Signals
- Manpower

Name	FTE	Signal	Activities
Berlin group			
Heiko Lacker	20%	Y, T, B', b*	supervisor, adviser
Dennis Sperlich	100%	b*, B'	signal production see link, analysis in a boo
Dustin Biedermann	100%	Y, T	analysis in a boosted regime, study of using large R jets
Janet Dietrich	100%	Y, T, B', b*	analysis, 1 lep single-prod. contact person
Sergio Grancagnolo	50% +25%	Y,T, B', b*	analysis, ana-top exotic contact
Ferdinand Schenck	100%	Y, T, B', b*	PDF Systematic, coupling limits
Bonn group			
Ian Brock		Y, T, B', b*	supervisor, adviser
Anjishnu Bandyopadhyay	50%	Y, T, B', b*	limit setting- Trexfitter
Dortmund group			
Kevin Kroeninger/Johannes Erdmann		Y, T	supervisor, adviser
Tobias Kupfer	30%	Y, T	signal width studies
Ankara group			
Orhan Cakir	30%	B'->Wt	supervisor, analysis
Ilkay Turk Cakir	50%	B'->Wt	signal studies, analysis, K-factor
Sinan Kuday	20%	B' ->Wt	signal studies, analysis

Exotics/HQT/VLQ Run 2

https://twiki.cern.ch/twiki/bin/viewauth/AtlasProtected/Run2VLQ1LeptonSingleVLQ

- B->tW->WWb analysis



PHYSICS STUDIES WITHIN EXOTICS GROUPS

TWiki > AtlasProtected Web > AtlasPhysics > ExoticsWorkingGroup > FourthgenerationandtopSubgroup (2017-09-05, LoicValery)

Edit Attach PDF

HQT (Heavy Quarks, Top and Composite Higgs) Exotics Subgroup

- **Conveners** : Loïc Valéry and Samuel Calvet (atlas-exot-hqt-conveners@cern.ch)
- **Related Groups** : Top Properties Jet Substructure
- **Mailing List** : atlas-phys-exotics-hqt@cern.ch
- **Meetings** : Mondays at 14:30, Heavy Quarks and Top Subgroup Meeting

Formerly known as 4GT, or fourth generation and top, the HQT group searches for Exotic (non-SUSY) new physics in top or top-like and final states.

Public Results

All Public: Exotics WG Results Top WG Results

Run 2 Analyses

VLQ pair Ht+X/4 tops 1-lepton	**Loïc Valery**, **Trisha Farooque**, *Aurelio Juste*	atlas-phys-exotics-HtX-4tops	Anaysis T
VLQ QQ→Zq+X	**Aytül Adiguzel**, *NA*	atlas-phys-exotics-VLQlight	Analysis
VLQ Combination	**Alison Lister**, **Loïc Valery**, *NA*	atlas-phys-exotics-VLQ-combination	Combo T

… … …

Analysis Team (show all)

ADIGUZEL, Aytul (Bogazici Istanbul)

Contact Editor

CANBAY, Ali Can (Ankara)

GOKTURK, Berare (Bogazici Istanbul)

ISTIN, Serhat (Bogazici Istanbul)

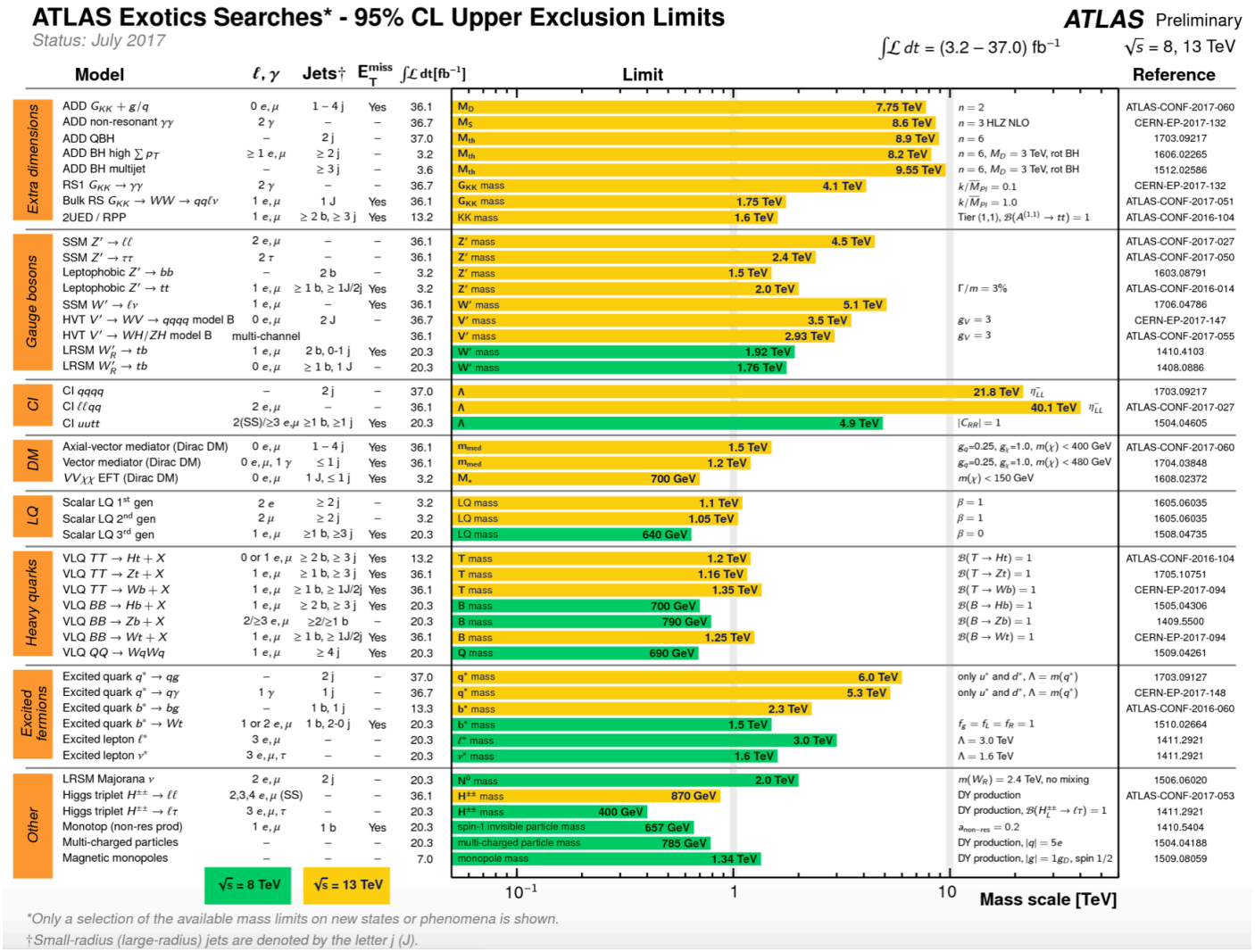
KAYA, Umit (TOBB)

OZCAN, Veysi Erkcan (Bogazici Istanbul)

SULTANOV, Saleh (TOBB)

UNEL, Gokhan (UCI)

ATLAS EXOTICS SEARCH MATRIX



Involvement in Physics analysis

https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/CombinedSummaryPlots/EXOTICS/

WORKING AT UPGRADE PROJECTS

Two of our students have worked in RPC prototype construction and testing.

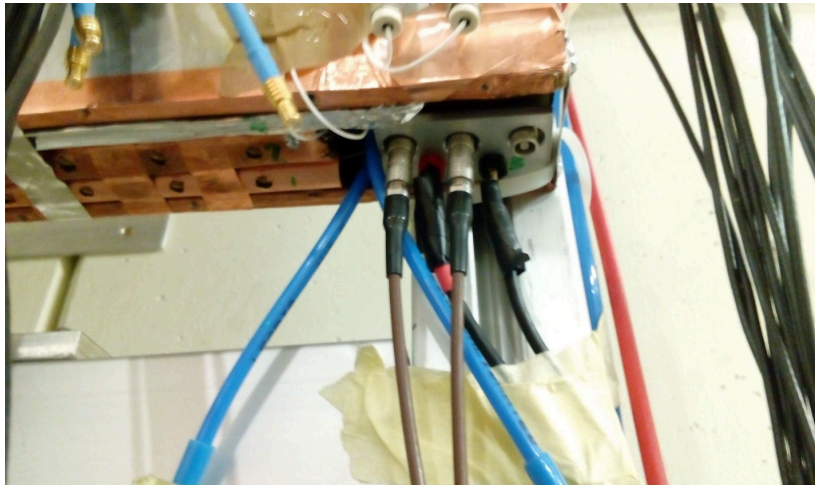
Cabling RPC

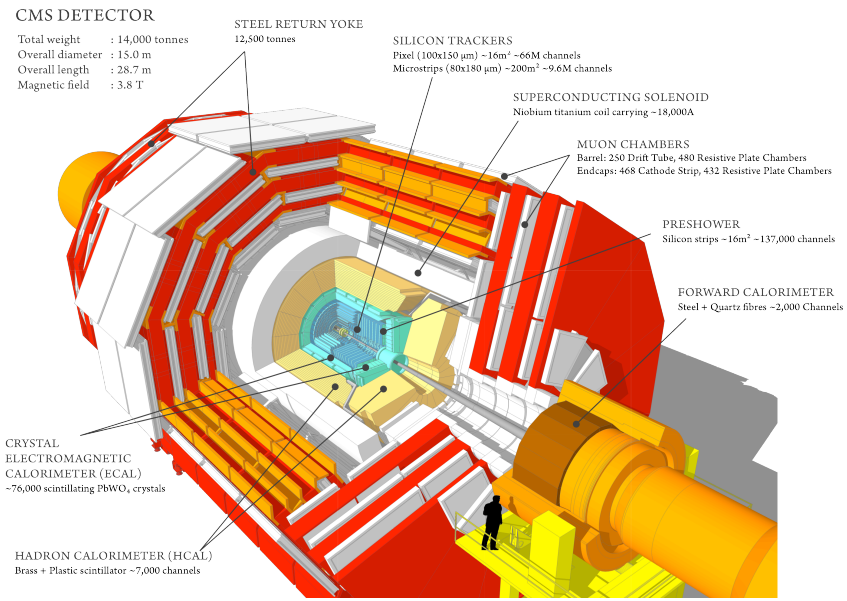


RPC DCS mainframe at BB5

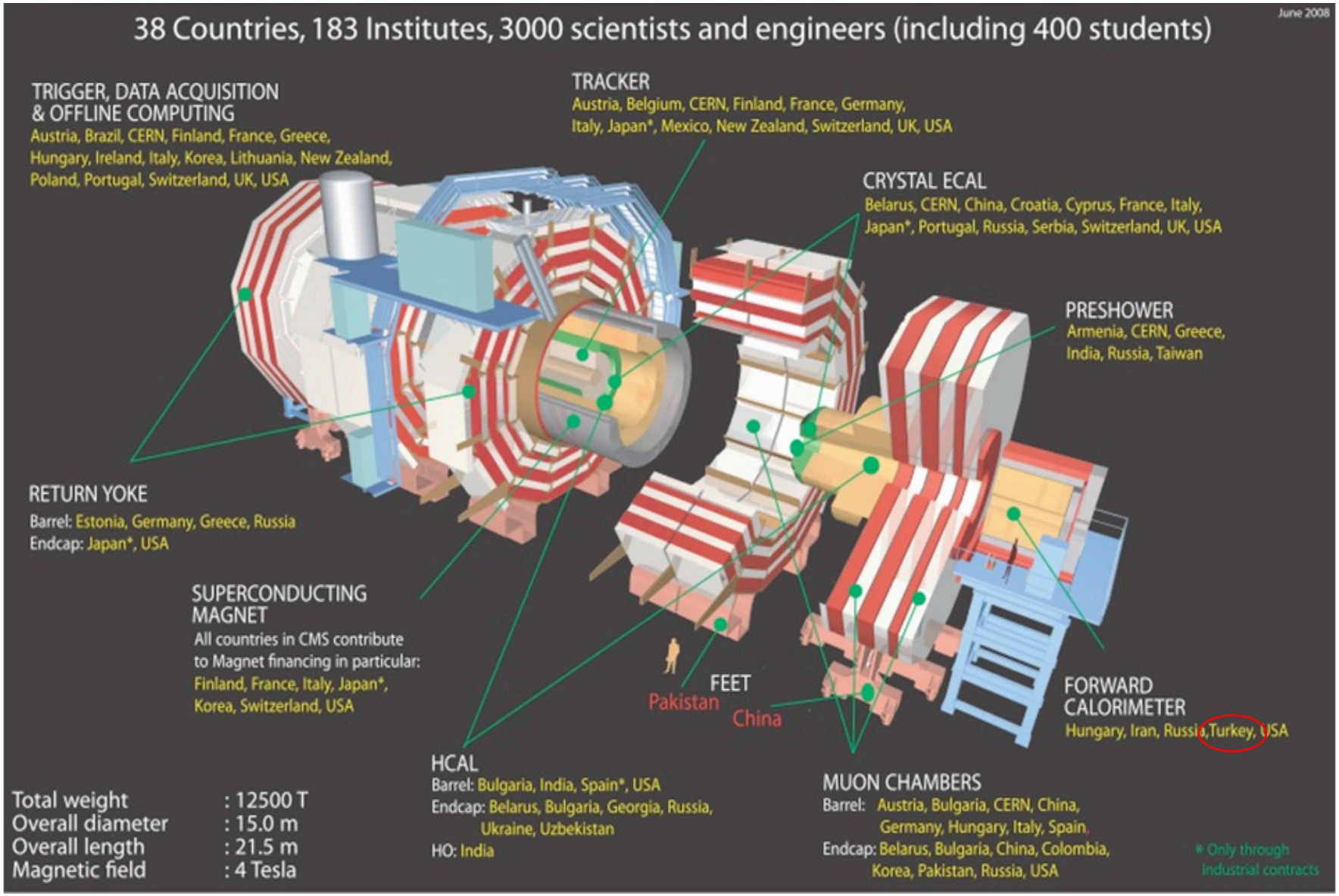


HV and gas connection



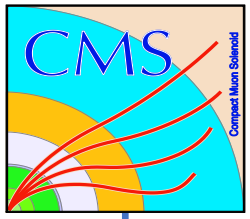


TR GROUPS WITHIN CMS


June 2008
38 Countries, 183 Institutes, 3000 scientists and engineers (including 400 students)
TRIGGER, DATA ACQUISITION & OFFLINE COMPUTING
Austria, Brazil, CERN, Finland, France, Greece, Hungary, Ireland, Italy, Korea, Lithuania, New Zealand, Poland, Portugal, Switzerland, UK, USA
TRACKER
Austria, Belgium, CERN, Finland, France, Germany, Italy, Japan*, Mexico, New Zealand, Switzerland, UK, USA
CRYSTAL ECAL
Belarus, CERN, China, Croatia, Cyprus, France, Italy, Japan*, Portugal, Russia, Serbia, Switzerland, UK, USA
PRESHOWER
Armenia, CERN, Greece, India, Russia, Taiwan
RETURN YOKE
Barrel: Estonia, Germany, Greece, Russia
Endcap: Japan*, USA
SUPERCONDUCTING MAGNET
All countries in CMS contribute to Magnet financing in particular: Finland, France, Italy, Japan*, Korea, Switzerland, USA
FEET
Pakistan
China
FORWARD CALORIMETER
Hungary, Iran, Russia, Turkey, USA
HCAL
Barrel: Bulgaria, India, Spain*, USA
Endcap: Belarus, Bulgaria, Georgia, Russia, Ukraine, Uzbekistan
HO: India
MUON CHAMBERS
Barrel: Austria, Bulgaria, CERN, China, Germany, Hungary, Italy, Spain
Endcap: Belarus, Bulgaria, China, Colombia, Korea, Pakistan, Russia, USA
* Only through industrial contracts
Total weight : 12500 T
Overall diameter : 15.0 m
Overall length : 21.5 m
Magnetic field : 4 Tesla

CMS INVOLVEMENT

- MoU signed with CMS at 1996 by 2 Main Institute
- Çukurova Univ. & METU
- Bogazici Univ. Joined CMS @ 2000
- ITU joined in 2013
- Project were supported by TUBITAK between 1996-2000
- Between 2005-Today by TAEK
- Project support only travel and living expences while team members are at CERN



TAEK only pays 12 M&O-CatA contribution for physicist since 2014









ORTA DOĞU TEKNİK ÜNİVERSİTESİ

• IST/BİLGİ U. • KARS/KAFKAS • IST/MARMARA U. • ANK/TUBITAK • IST/YILDIZ TECH U.	• ADIYAMAN U. • IST/IAU • MERSIN U. • IST/PRU • TOKAT/GOPU	ANK/HACETTEPE	• ESKIŞEHİR/ANA. U. • IST/ÖZYEĞİN U. • IZMIR/İYTE • IZMIR/DOKUZ EYLÜL U. • KONYA/NEU
REGISTRATED (AUTHORS) 5 Physicist (3) 2 Engineers 2 Graduates (2) 4 Undergraduates	**REGISTRATED (AUTHORS)** 10 Physicist (5) 4 Engineers 20 Graduates (19) 15 Undergraduates	**REGISTRATED (AUTHORS)** 3 Physicist (2) 0 Engineers 3 Graduates (3) 3 Undergraduates	**REGISTRATED (AUTHORS)** 16 Physicist (1) 2 Engineers 4 Graduates(4) 4 Undergraduates

CMS TR ORGANIZATION

NATIONAL CONTACT : ERHAN GÜLMEZ
LINK PERSON : AYSEL KAYIŞ TOPAKSU

BOGAZİÇİ UNI.
GROUP LEADER : ERHAN GÜLMEZ
PROJECT LEADER: ERHAN GÜLMEZ

ÇUKUROVA UNI.
GROUP LEADER: İSA DUMANOĞLU
PROJECT LEADER: AYSEL KAYIŞ TOPAKSU

METU
GROUP LEADER : MEHMET ZEYREK
PROJECT LEADER: MEHMET ZEYREK
PROJECT LEADER: ALİ MURAT GÜLER

ISTANBUL TECH. UNI.
GROUP LEADER : KEREM CANKOCAK
PROJECT LEADER: KEREM CANKOCAK

DUTIES IN CMS MANAGEMENT

- CMS HCAL Resource Manager (2014 – cont.)
- Other Non-Member States MB Representative (2014-2016)
- CMS B Physics Sub-Convener
- Small-x QCD & Forward Jets Sub-Convener

PHD THESIS

Graduation date	Name	Graduation date	Name
2001	İsa Dumanoğlu	2011	Ferhat Özok
2002	Hatice Duran Yıldız	2011	Halil Gamsızkan
2005	Kenan Söğüt	2011	Bora Işıldak
2005	Kerem Cankoçak	2012	Mehmet Vergili
2006	Selda Esen	2012	Nasuf Sönmez
2006	Taylan Yetkin	2012	Kadir Öcalan
2007	Efe Yazgan	2012	I. Vasileva Akın
2008	Sezen Sekmen	2013	E. Ersin Kangal
2009	Bayram Tali	2013	Sercan Şen
2009	M. Numan Bakırcı	2014	Aytül Adıgüzel
2009	Pelin Kurt	2014	Semiray Girgis
2009	Salim Çerçi	2014	Gül Gökbulut
2010	Hüseyin Topaklı	2014	Kadri Özdemir
2010	Mehmet Deliömeroğlu	2015	Özlem Kaya
2011	Sertaç Öztürk	2016	Emine Gürpınar
2011	I. Nükhet Vergili	2016	İlknur Hoş
		2016	Buğra Yıldız

33 PhD thesis completed between 2001-2016, most currently working in universities.

HARDWARE CONTRIBUTION TO CMS I

- Contrubuting to construction of CMS HF and CASTOR calorimeters.
- Installing Online Radiation Damage System to HF.
- Quality test of Castor PMTs
  - Gain, Dark Current & Timing Parameters or CASTOR PMTs tested.
- CMS awards:
  - Two Turkish Companies (MFK&EAE) received CMS Gold award in 2003 for perfect and on time production of backplane of CMS HF.















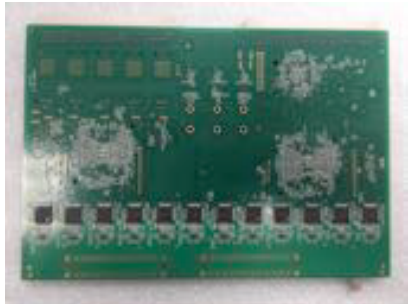
HARDWARE CONTRIBUTION TO CMS 2

- QIE 200 HF –FE QIE electronic cards were produced in Istanbul by SIMPRO.
- This Cards are 18-layers PCBs.

- Calibration & Commissioning
- Contributing to Test beam of HCAL upgrade.
  - Testing and mounting FE electronics of HF.
  - Radioactive sourcing of HF
  - Prompt feedback analysis of CMS
  - Testing Low voltage power supply and silicon sensors of HGCAL.







PHYSICS CONTRIBUTION TO CMS

- Exotica
  - Dark Matter
    - Lepton Portal DM
  - Large Extra Dimensions(ADD model)
  - Unparticles
  - Bump hunting in Dijet
- Standart Model
  - Search for SM Higgs boson in CMS via vector boson fusion.
  - Differenrial cross section measurements for the production of a Z boson in association with jets in pp collisions at **√s = 13 TeV.**
  - Differenrial cross section of the production of a W boson in association with jets at **√s = 13 TeV**
  - **Z+Jet Cross Section Measurements at CMS**
  - Forward-Backward Asymmetry of Drell-Yan Pairs.
  - Measurements of differential cross sections in pp collosions.
  - Monte Carlo tunning for QCD events.

SUSY

Boosted Top-Tagging Supersymmetry with the Heavy Scalars at the LHC

B Physics

Spectroscopy of b Mesons

Jet Studies

Jet Energy Calibration

Measurement of Dijet Cross Section

Forward Physics

Inelastic pp Cross Section Measurement @ **√s = 13 TeV**

Energy distributions measurements at the forward region ($3.1<\eta<5.2$ & $-6.6<\eta<-5.2$)of CMS.

PROJECTS SUPPORTED BY TUBITAK AND TAEK

TUBITAK Projects:

- ODTU: 1 project groups between 1996-2000
- Cukurova: 1 project group between 1996-2000

TAEK Projects:

- ODTU: 2 project groups since 2005
- Cukurova: 1 project group since 2005
- ITU: 1 project group since 2013
- Bogazici: 1 project group since 2005

CMS Integration & Physics Simulation Workshop, Antalya, Turkey

28 Mar 2006, 15:00 → 1 Apr 2006, 10:00 Europe/Zurich

Magic Life Waterworld, Antalya, Turkey

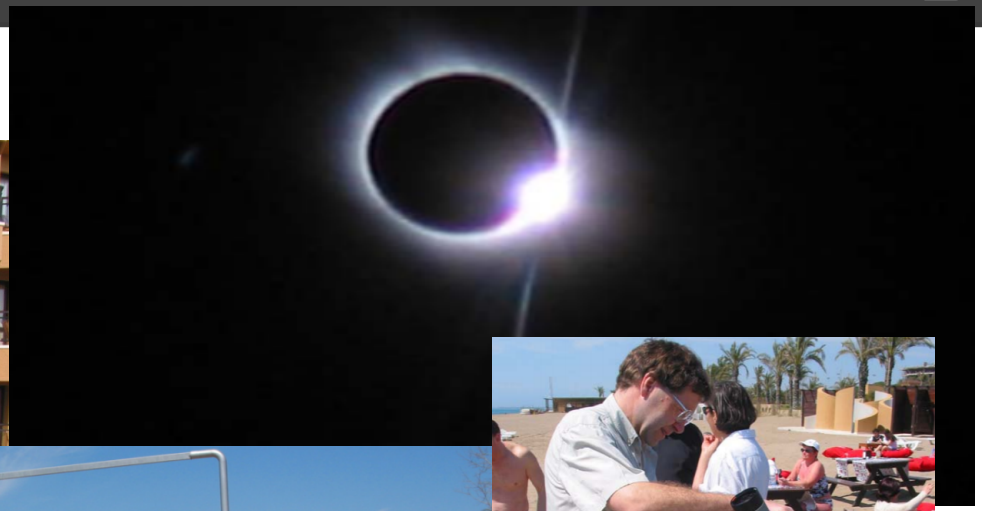
Erhan Gulmez

conference photo

Tuesday, 28 March

15:00 → 18:30 **Welcome and Registration**





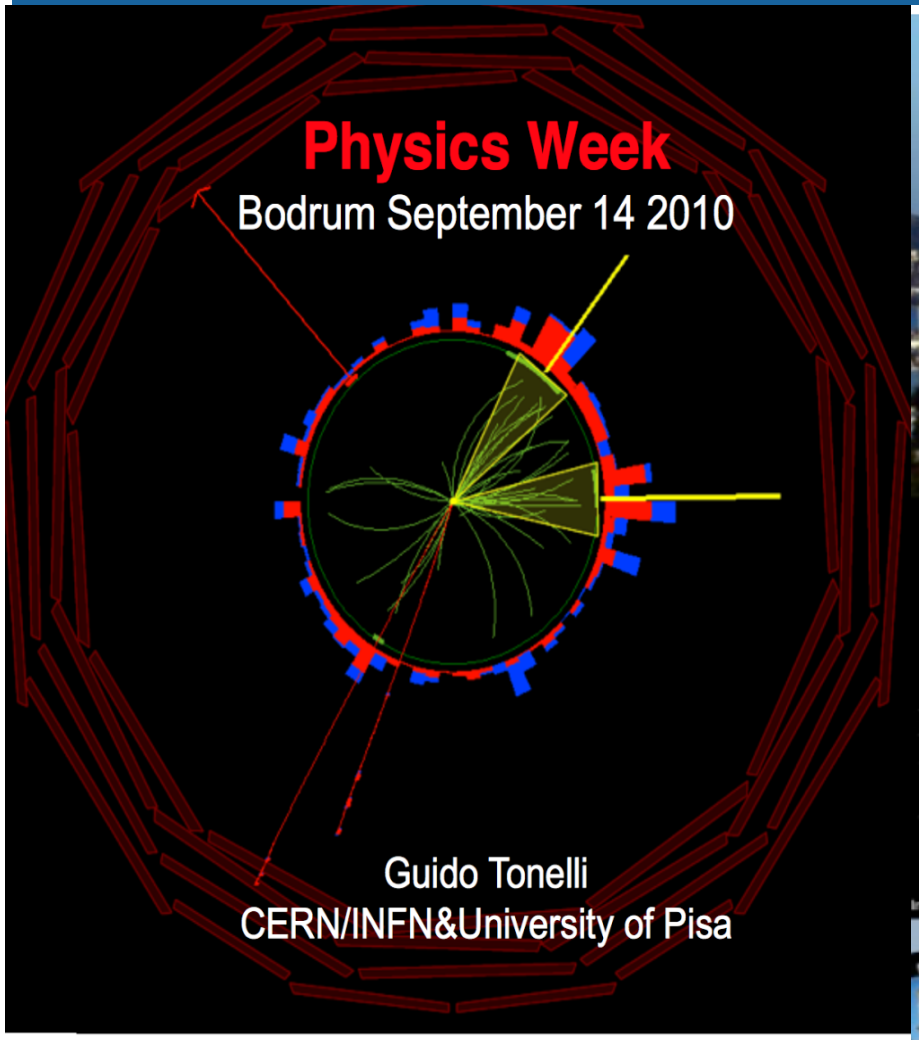


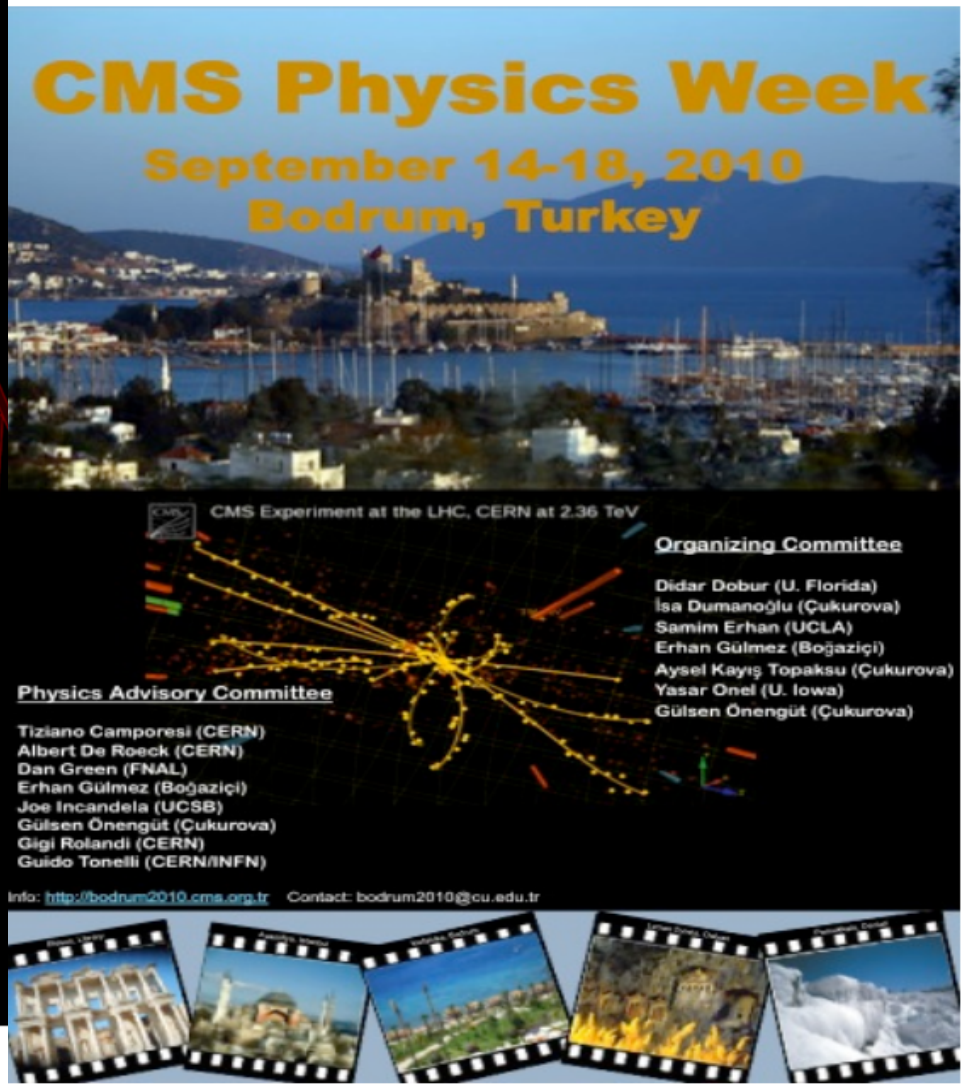


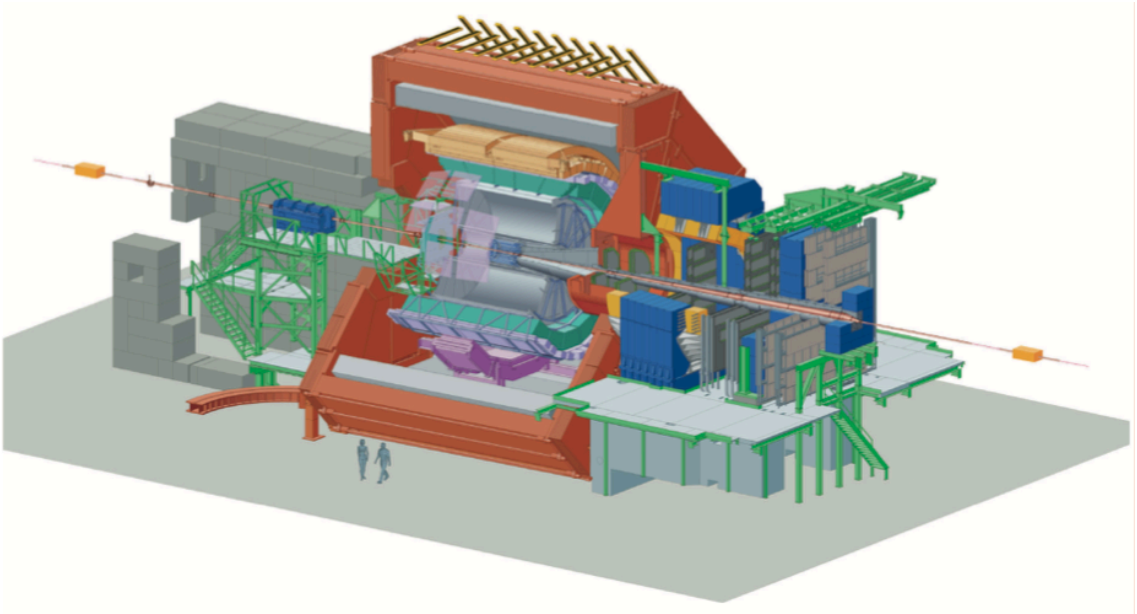
CMS Physics Week

14 Sep 2010, 08:30 → 18 Sep 2010, 20:00 Europe/Istanbul

Bodrum







TR GROUPS WITHIN ALICE EXPERIMENT

TR GROUPS IN ALICE

Member: KTO Karatay University, Konya, Turkey

MoU: Signed on 27th of August 2013

2 Ongoing Projects: Total Budget of 0.4 M$

- TAEK: Study of Δ^{++} and $\Delta^{-,-}$ Resonance Productions in pp, pPb and PbPb Collisions at the ALICE Experiment
- TUBITAK: The Study of Particle Ratios in High Energy Relativistic Proton-Proton and Heavy Ion Collisions Using the Statistical Thermal Model Approach

Group Members:

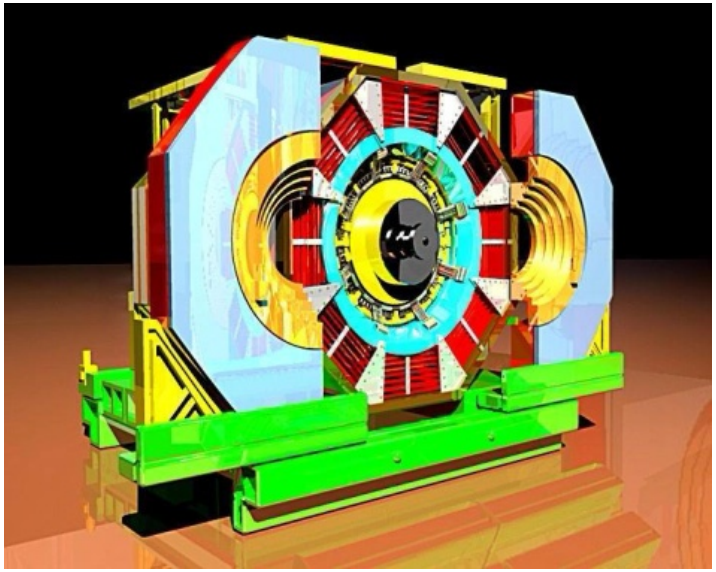
- Team Leader: Assoc. Prof. Dr. Ayben Karasu Uysal
- Students: 2 Ph.D. and 1 M.Sc.
- Collaborating Universities: Istanbul Technical University, Yildiz Technical University

KTO KARATAY ÜNİVERSİTESİ

TR GROUPS IN ALICE

Current Activities: Data analysis and GRID Computing

- Data Analysis: Resonance Particles and Charged Particle Multiplicities
  * Contribution to ALICE papers about resonances and multiplicity
- GRID Computing: Dedicated server farm for HEP and GRID Computing
  * GRID Node at Karatay University
- Detector Simulations and Reconstruction



TR GROUPS WITHIN BESIII

HISTORY WITHIN BESIII

- **2011**: The flagship proposal of the Turkic Accelerator Center (TAC) Project's was to design and build a Super Charm Factory on a linac-ring type e^+e^- collider. The TAC project executive board decided to form a team from the project group to join BESIII in order to gain experience in an operational e^+e^- facility. A team of 3 senior members prepared a proposal to join BESIII
  - TAC-PF(Particle Factory) team was unanimously welcomed to BESIII as a cluster during the BESIII Collaboration meeting after a presentation by Serkant Çetin.
- **2012-now**, TL: Serkant Çetin
  - One new member joining the TAC-PF team (İ. Uman), the **cluster became 4 PhD's**.
  - **TAC project** covered travels to IHEP from **2011-2013 only**!

HISTORY WITHIN BESIII

- 2014 and on: travels were partially covered from University resources or from members' own support (whoever was to go to IHEP was covered by the four members on an equal share!).
- **TAEK** did not fund or support BESIII since they claimed their responsibility is restricted to CERN programs only. **TUBİTAK** had no funding project category for such an international collaboration. Submitted proposals to **University's Research Project** funds were not accepted
- By Sept. 2016: **the team was reduced to 2 seniors** since the due opearation tasks for the cluster was not met for years.

Current team: 2 seniors, 1 grad. student (recently defended PhD thesis but ongoing with writing the analysis memo)

ACTIVITIES WITHIN BESIII OVER YEARS

Contributions

- Data analysis:
  - Search for resonances in $J/\psi \rightarrow \phi \pi^0 \pi^0$ decays
  - Study of $J/\psi \rightarrow \phi K_s K_s$
  - Analysis of $J/\psi \rightarrow \omega \pi^0 \pi^0$
- Detector development:
  - ToF detectors WG
- Data taking shifts
- Internal refereeing
- Institutional paper reviewing

Responsibilities

- No operational duties and coordination duties

MSc Thesis

2013: Engin Eren*

2014: Nurdan Güler**

2015: Alperen Yüncü*

PhD Thesis

2017: Onur Buğra Kolcu*

* *Physics analysis*

** *Detector development*

Benefits for TAC Project

- Adaptation of the BESIII software framework "BOSS" for TAC-PF design.
- MoU between IHEP and Ankara U. (TAC project coordinator)

CONTRIBUTIONS TO FUTURE EXPERIMENTAL PROGRAMS

CERN Accelerating science

The CERN Experimental Programme

Grey Book database

» Experiments and Projects under Study

Welcome | Experiments & Projects

Programme	Name	Synonym	Title	Date of Approval	Status
R&D	CALICE		Proposal for SPS beam time for the CALICE calorimeter prototypes		In-Progress
Future Collider Study	CLICdp		CLIC Detector and Physics		Preparation
Non-accelerator experiments	EEE		Progetto "La Scienza nelle Scuole"		Test
Non-accelerator experiments	EISA		European Institute for Sciences and their Applications		Preparation
Non-accelerator experiments	ESI		European Scientific Institute		In-Progress
Future Collider Study	FCC		Future Circular Collider		Preparation
Non-accelerator experiments	H8-RD22	CRYSTAL	SPS-H8 experiment to test crystal collimation for LHC		In-Progress
SPS	HERD		The High Energy cosmic Radiation Detection facility		Test
Non-accelerator experiments	LAA		LAA		Extension
R&D	LANNDD		5m Driftinliquid Argon		Test
Future Collider Study	LHeC		Large Hadron Electron Collider		Preparation
Future Collider Study	Linear Collider Detector	LCD			Preparation
R&D	MEDIPIX 3		Pixel readout chips for particle detection and imaging		Preparation
R&D	microScint		Microfluidic Scintillation Detectors		Preparation

CLIC DETECTOR AND PHYSICS STUDY (CLICDP)

ABANT IZZET BAYSAL UNIVERSITY (AIBU)

Group Members:

- Prof.Dr. Haluk Denizli, Assoc.Prof.Dr. Abdulkadir Şenol
- Grad. students 1 PhD and 2 MSc

Support:

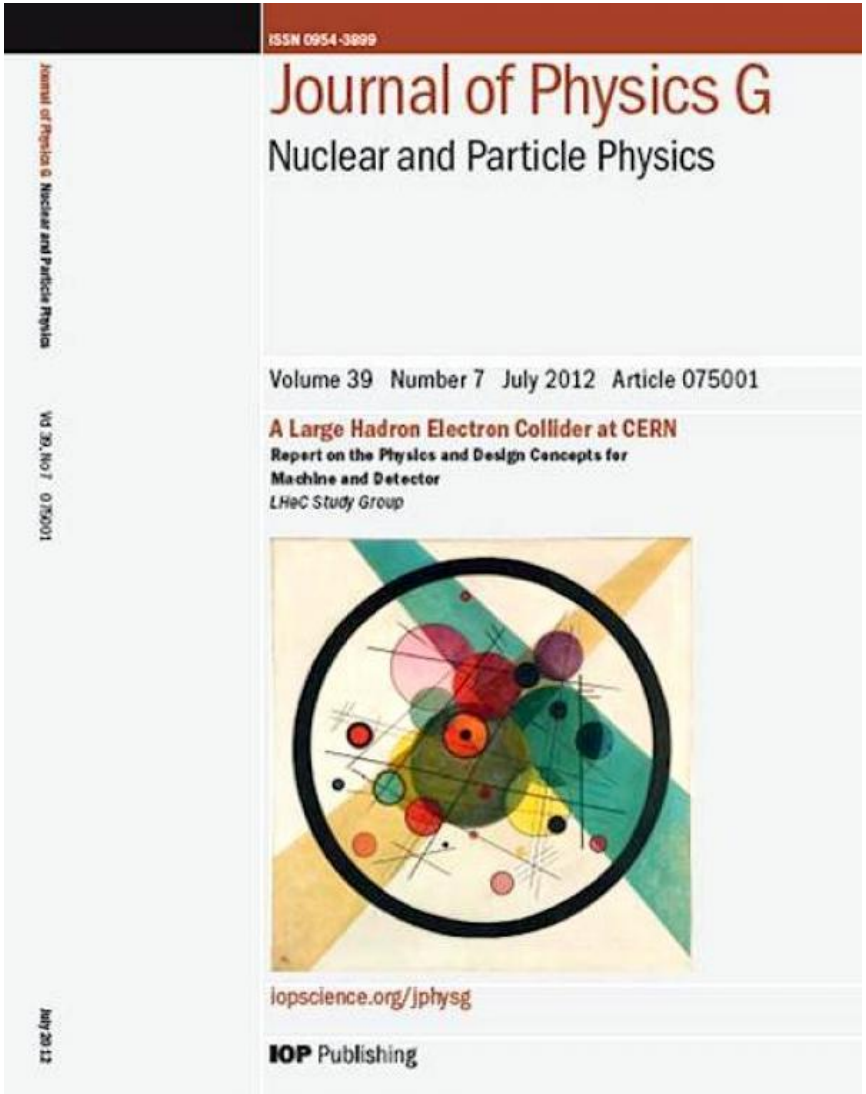
- TAEK : Turkish Atomic Energy Authority
- BAP-AIBU: Projects of Scientific Investigation at Abant İzzet Baysal University

Research Areas:

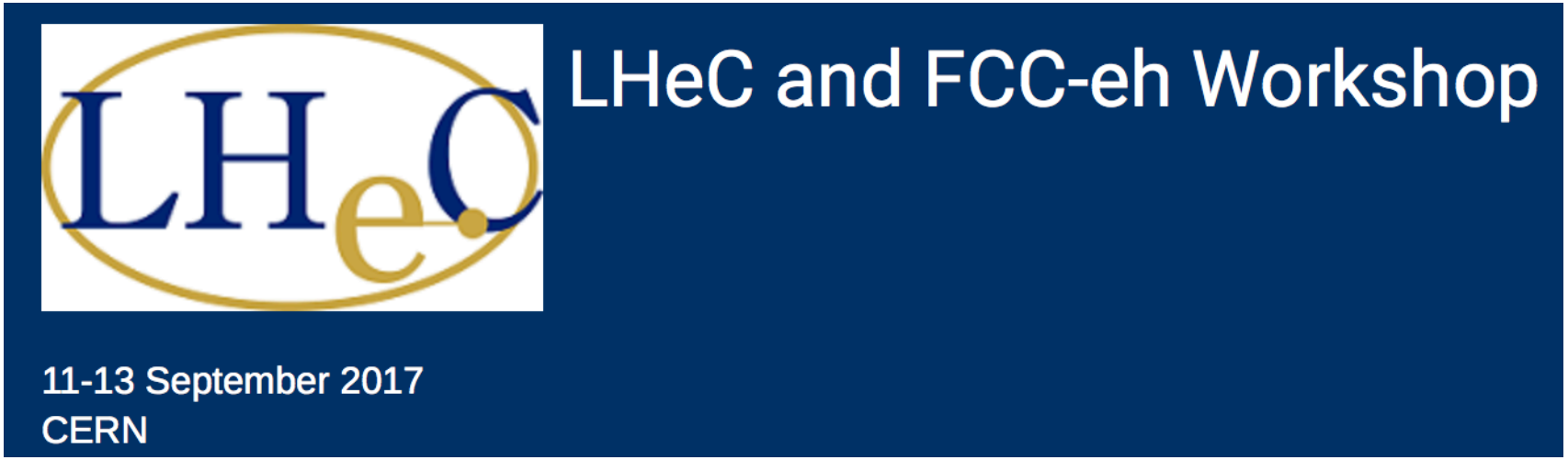
- Ongoing :
  - Differential WW-fusion measurement for EFT interpretation at 1.4 TeV
- Planned :
  - Physics Potential Studies of CLIC
  - R&D on vertex detector

PARTICIPATION TO LHeC

- contributions from 21 TR authors (on physics, detector simulation and acc. studies)

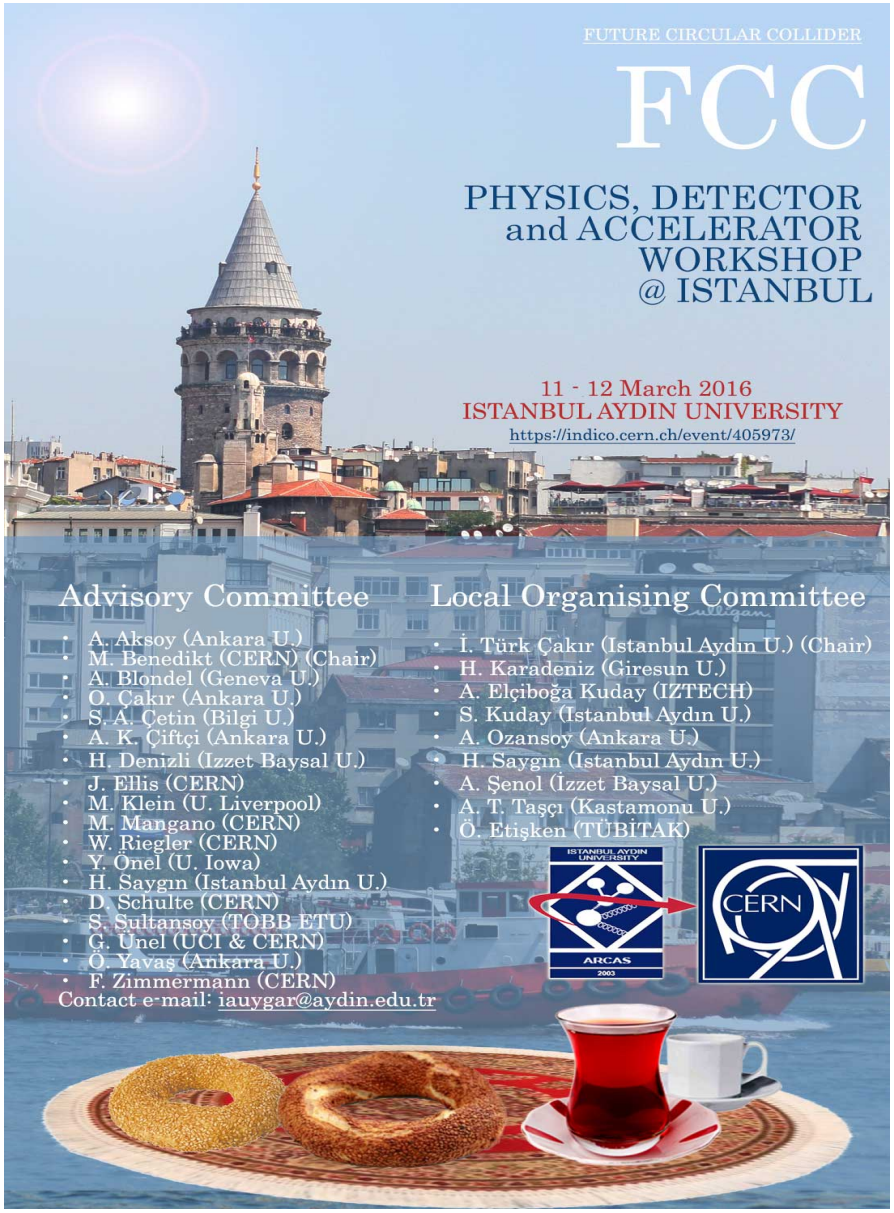


PARTICIPATION TO RECENT LHeC WORKSHOP

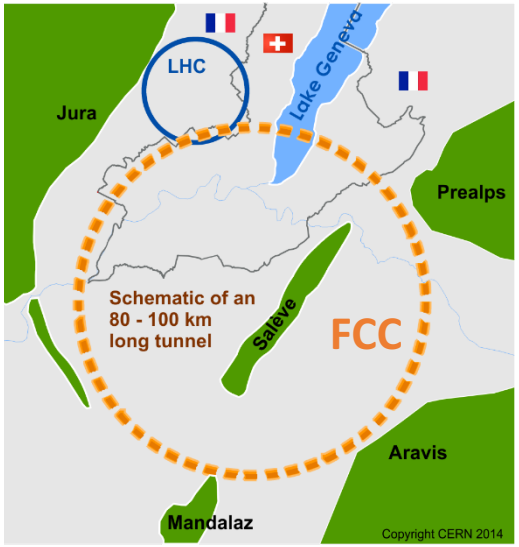


	Overview of Top activities (SM and BSM)	*Christian Schwanenberger*
	30-7-018 - Kjell Johnsen Auditorium, CERN	16:30 - 16:45
✓	**Searches for FCNC tugamma couplings**	*Orhan Cakir*
	30-7-018 - Kjell Johnsen Auditorium, CERN	16:45 - 17:00
17:00	**Measuring the CP nature of top-Higgs couplings**	*Mukesh Kumar*
	30-7-018 - Kjell Johnsen Auditorium, CERN	17:00 - 17:15

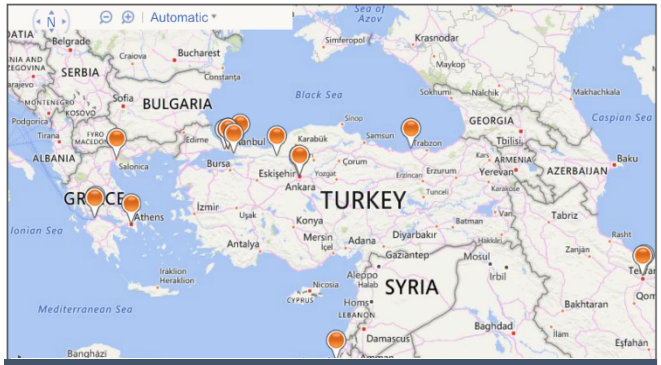
TR PARTICIPATION TO FUTURE CIRCULAR COLLIDER



TR PARTICIPATION TO FCC COLLABORATION



FCC-hh: 100 TeV pp collider as long term goal
FCC-ee: e^+e^- collider, potential intermediate step
FCC-eh: integration aspects of ep collisions



Collaborating Universities

Main goal of FCC collaboration is to complete CDR of FCC at the end of 2018

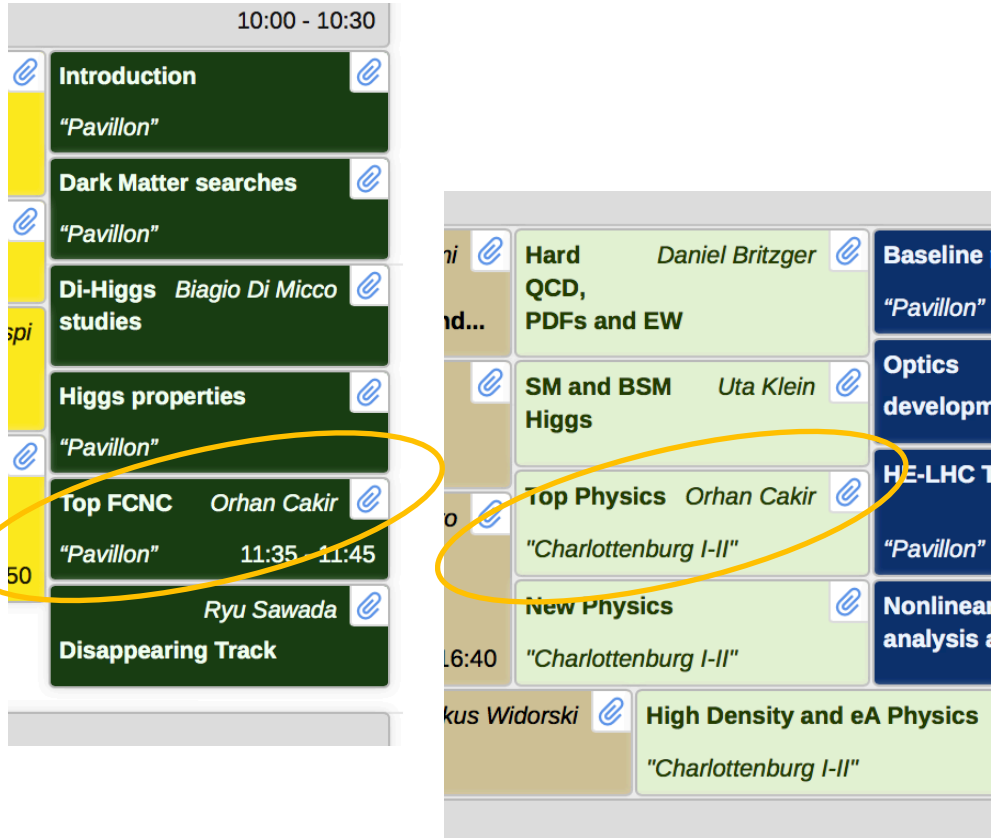
- Recent workshop FCC Week (29 May-02 June 2017, Berlin)
- Contributions in workshop (presentations)
- Linac and damping ring (S.Ogur)
- Pre-booster ring (O.Etisken)

9 Turkish Universities signed MoU and three of them (Ankara, AIBU and Giresun) signed an Addendum with CERN-FCC to give contributions on accelerator, detector and physics studies.

- *AIBU*, Bolu
- *Ankara U*, Tandogan/Ankara
- *Giresun U*, Giresun
- *Isik U*, Sile, Istanbul
- *Istanbul Aydin U*, Istanbul
- *Istanbul U*, Vezneciler-Istanbul
- *Okan U*, Istanbul
- *PRU*, Tuzla/Istanbul
- *TOBB ETU*, Ankara

PRESENTATION IN FCC WEEK 2017

Oral Presentations





Poster Presentations

Probing Anomalous HVV Couplings at the FCC-ep
Indico Contribution
Authors: Turk Cakir Ilkay,Altınlı Murat,bolukbasi olcay,Cakir Orhan,Kartal Sehban,Senol Abdulkadi
Start Date: Tuesday, May 30, 2017 7:16:00 PM
Event Details

indico.cern.ch/event/556692/contributions/2600893/

Production of High Mass Charged Higgs Boson at FCC-hh
Indico Contribution
Authors: Turk Cakir Ilkay,Cakir Orhan,Denizli Haluk,Senol Abdulkadir,Yilmaz Ali
Start Date: Tuesday, May 30, 2017 7:14:00 PM
Event Details

indico.cern.ch/event/556692/contributions/2600892/

Resonant Production of Scalar Leptons by RPV Couplings at th...
Authors: Kartal Sehban,Bolukbasi Olcay,Ozdemir Kadri,Pagliarone Carmine,Sahin Mehmet Ozgur,Sultansoy Saleh,Yilmaz Ayberk
Event date: Tuesday, May 30, 2017 7:06:00 PM
Event Details - Contribution Details

indico.cern.ch/.../Resonant_Production_of_Scalar_Leptons_by_RPV_Cou...

SUMMARY AND CONCLUSION

CMS Team summarizes their plan as

- continue to contribute to physics analysis
- take part for Phase II upgrade projects
- manufacture some of the EC(HGCAL) parts in Turkey
- participate for HF upgrade, Increasing the read out channels from 2 to 4.

ATLAS Team summarizes their plan as

- continue to contribute to physics analysis
- Continue current resp. in TRT
- take part in Phase II upgrade projects (muon)

Other teams for future collider experiments emphasis

- increasing interested people in designing future collider exp.
- bright future for accelerator-based HEP !

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