Collaboration with CERN - Status

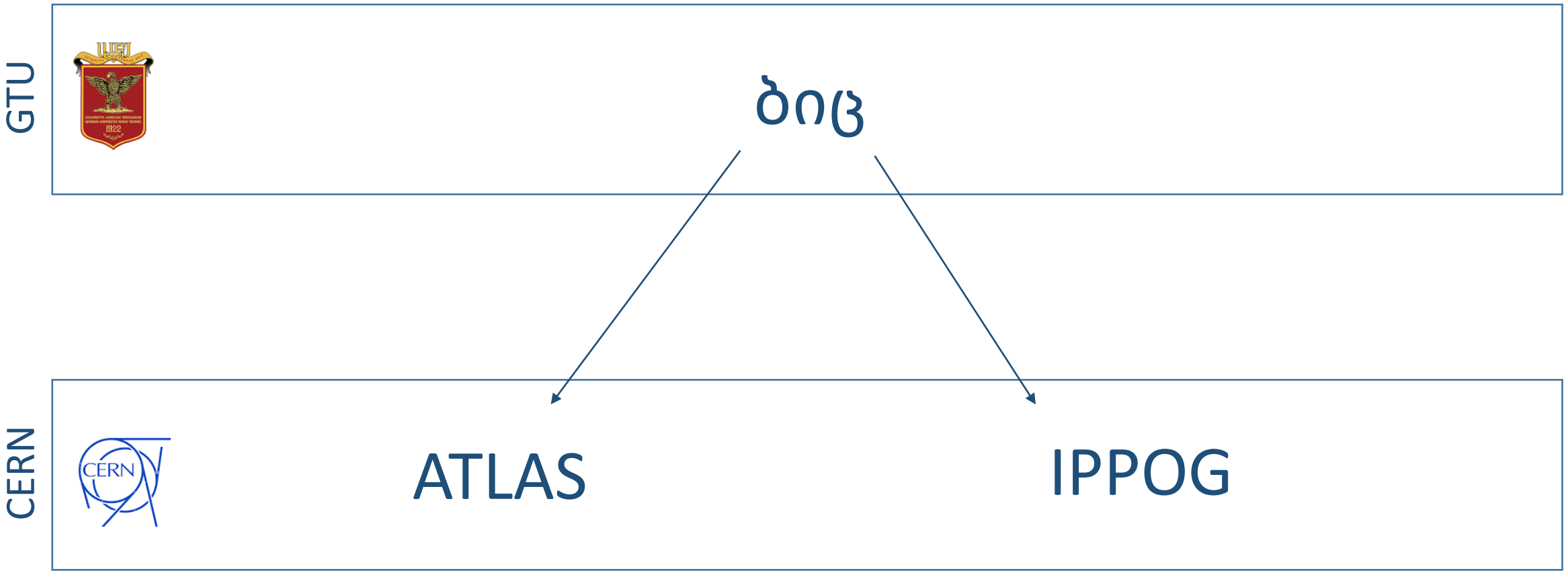
Challenges, Future Step

SHARMAZANASHVILI Alexander

Georgian Technical University

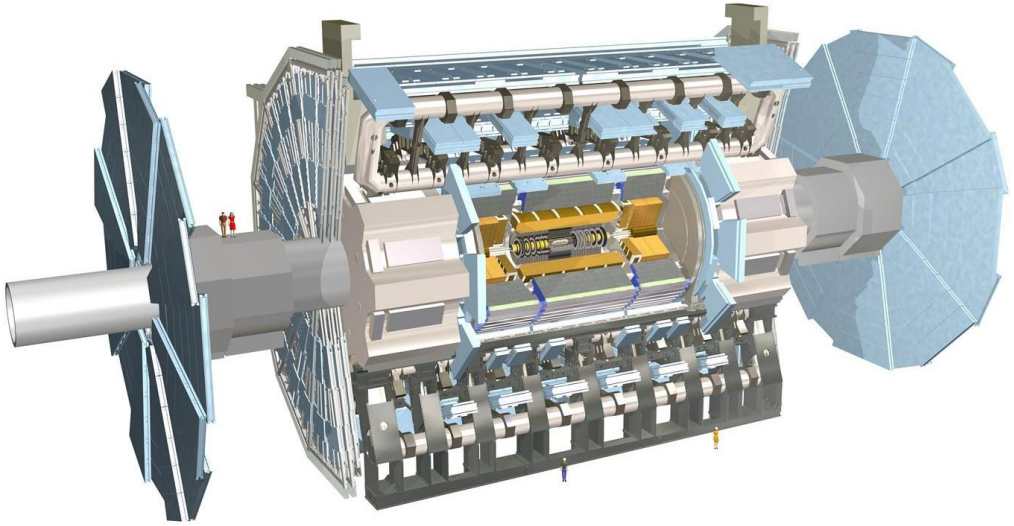
Collaboration with CERN

- *Two* agreements have been signed with CERN in 2021



ATLAS Experiment

- ATLAS Detector



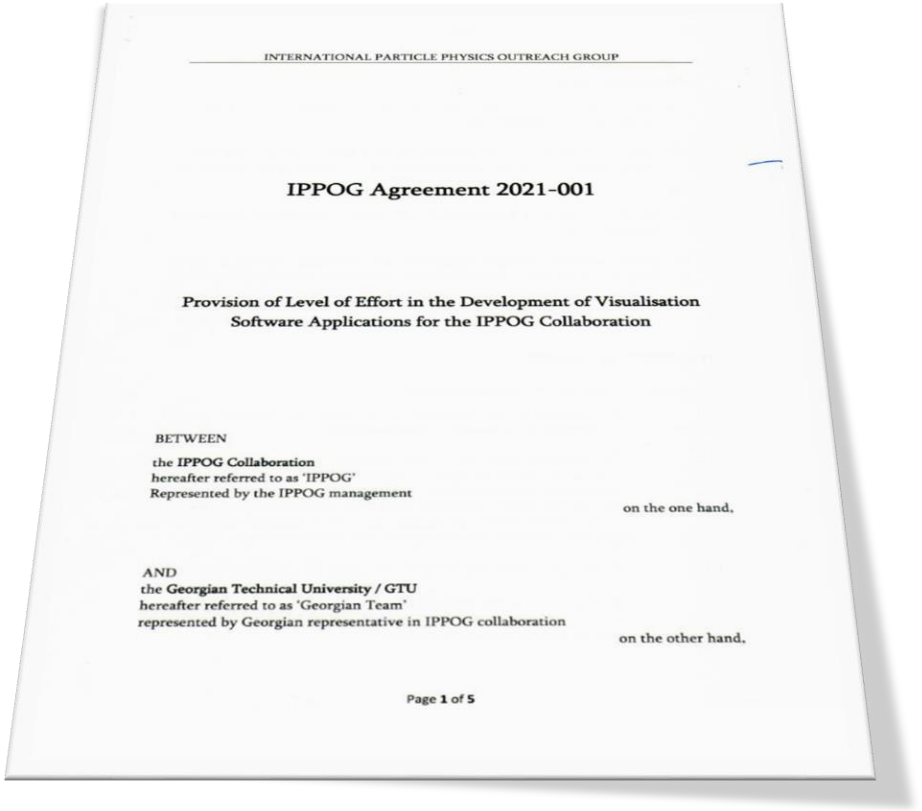
- Diameter – 25m
- Length – 46m
- Weight – 7’000t
- Cables – 3’000km

- ATLAS Collaboration

- ~ 3’000 Scientists and Engineers

IPPOG – International Particle Physics Outreach Group

- IPPOG-GTU Agreement



INTERNATIONAL PARTICLE PHYSICS OUTREACH GROUP

IPPOG Agreement 2021-001

Provision of Level of Effort in the Development of Visualisation Software Applications for the IPPOG Collaboration

BETWEEN
the **IPPOG Collaboration**
hereafter referred to as 'IPPOG'
Represented by the IPPOG management
on the one hand,

AND
the **Georgian Technical University / GTU**
hereafter referred to as 'Georgian Team'
represented by Georgian representative in IPPOG collaboration
on the other hand,

Page 1 of 5

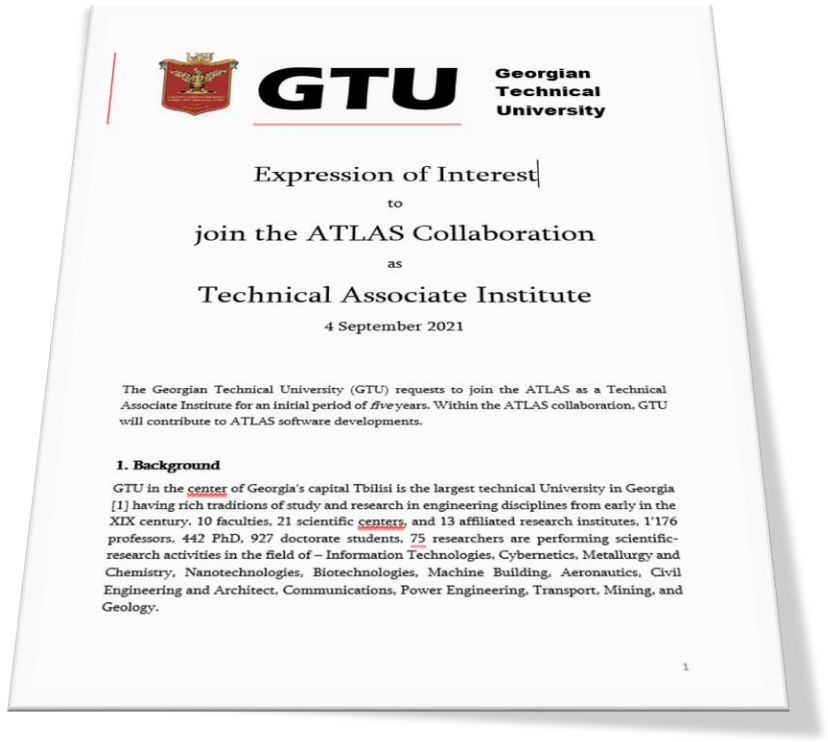
- 5 Work Packages to be done

- IPPOG Collaboration

- 39 Members
- 32 Countries

ATLAS-GTU TAI Agreement

- Technical Associate Institute agreement with ATLAS started in 2022 and will follow up to 5 years



GTU Georgian Technical University

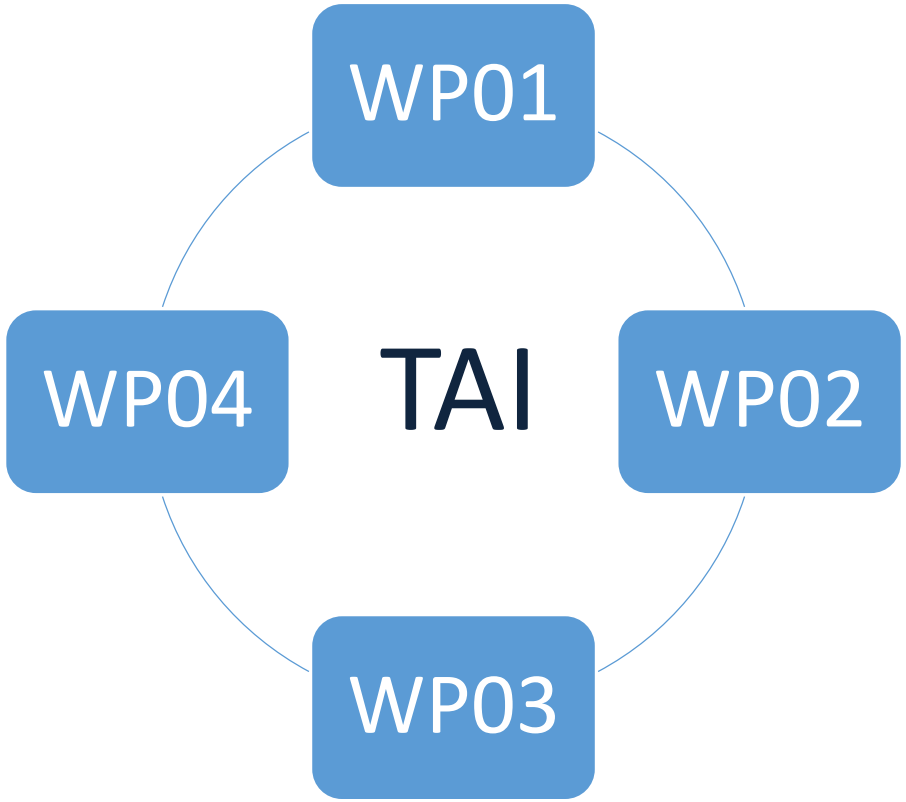
Expression of Interest
to
join the ATLAS Collaboration
as
Technical Associate Institute
4 September 2021

The Georgian Technical University (GTU) requests to join the ATLAS as a Technical Associate Institute for an initial period of *five* years. Within the ATLAS collaboration, GTU will contribute to ATLAS software developments.

1. Background

GTU in the center of Georgia's capital Tbilisi is the largest technical University in Georgia [1] having rich traditions of study and research in engineering disciplines from early in the XIX century. 10 faculties, 21 scientific centers, and 13 affiliated research institutes, 1'176 professors, 442 PhD, 927 doctorate students, 75 researchers are performing scientific-research activities in the field of – Information Technologies, Cybernetics, Metallurgy and Chemistry, Nanotechnologies, Biotechnologies, Machine Building, Aeronautics, Civil Engineering and Architect, Communications, Power Engineering, Transport, Mining, and Geology.

1



WP01: ASCIG

- WP01: ASCIG – Software Quality

  Status: The work plan is done at 54%

  Main problem: Manpower leave the team in April 2022 and there is not yet a replacement

Tasks:

1. Keep the current installations of CPPcheck and Coverity in working order and update the packages as needed
2. Run the automatic CPPcheck scans and associated tools to report the errors found to the authors of the relevant software packages
3. Set up automatic Coverity scanning processes, integrated with Gitlab and other tools used by software developers

	WP01 Plan for 2022	Status	Percentage
1.	Automation Modules for Cppcheck scanning	Done	100%
2.	Cppckeck scan for individual Merge Requests	Done	15%
3.	Automation modules for Coverity full scan	Done	100%
4.	Automation modules for Coverity incremental scan	Not Done	0%

WP02: Outreach & Education

- WP02: Outreach & Education

  Status: The work plan is done at 71%

  Main problem: Big amount of R&D work for the development of the ARB 3D scenes

Tasks:

1. For Tracer/VR the geometry descriptions of the Point-1 civil engineering and services will be developed from existing CAD models and delivered at the end of 2022
2. For the Tracer/ART R&D work will be done on the first stage (end of 2022)
3. For the ARB, geometries for the 3D scenes will be developed according to the materials of the related printed documents. On average 5 scenes will be developed per year.

	WP02 Plan for 2022	Status	Percentage
1.	Development of the geometry descriptions of the Point-1 civil engineering and services	Done	90%
2.	R&D work for the Tracer/ART – engine selection	Done	70%
3.	Development of the ARB 3D scenes	Done	20%
4.	Development of the ARB software applications	Done	100%

WP03: Tile Calorimeter Group

- WP03: Tile Calorimeter

  Status: The work plan is done at 100%

  Main problem: No major problems

Tasks:

1. 2 releases of the application - releases R1.0 and R2.0 in 2022
2. 2 releases of the application - R3.0 and R4.0 in 2023.

	WP03 Plan for 2022	Status	Percentage
1.	R1.0 of the visualization application	Done	100%
2.	R2.0 of the visualization application	Done	100%

* Short term visit of a Georgian student was done with the support of the Tile calorimeter group

WP04: ITK

- WP04: ITK Simulation

  Status: The work plan is done at 73%

  Main problem: Big amount of R&D work; understanding the ITK hardware; missing the technical data

Tasks:

1. Geometry descriptions of PP1 assemblies will be considered in the separate projects
2. Each project will foresee 9 consecutive stages of development
3. At each stage, deliverables will be technical reports of the geometry analyses and geometry descriptions in the CATIA platform and XML
4. On average 3 projects will proceed per year.

	WP04 Plan for 2022	Status	Percentage
1.	PP1 Outerwall Services (9 stages)	Done	100%
2.	PP1 Innerwall Services (9 stages)	Done	100%
3.	PP1 Inner Cylinder Endflange	Done	20%

Other Activities

- Participation in the ATLAS workshops:
  1. ITK Startup meeting : 2022-02-08
  2. ITK Plenary meeting : 2022-03-08 https://indico.cern.ch/event/1065545/
  3. Outreach & Education workshop : https://indico.cern.ch/event/1137747/
  4. Simulation Group Meeting : 2022-05-10 https://indico.cern.ch/event/1154906/
  5. TileCAL Week : 2022-06-17 https://indico.cern.ch/event/1169806/
  6. ITK Offline SW meeting : 2022-09-23 https://indico.cern.ch/event/1202683/
  7. TileCAL Calibration, Data Quality, Performance and Processing : 2022-12-12 https://indico.cern.ch/event/1214615/
  8. First PMBC'2022 Workshop : 2022-11-29 https://indico.cern.ch/event/1226012/timetable/

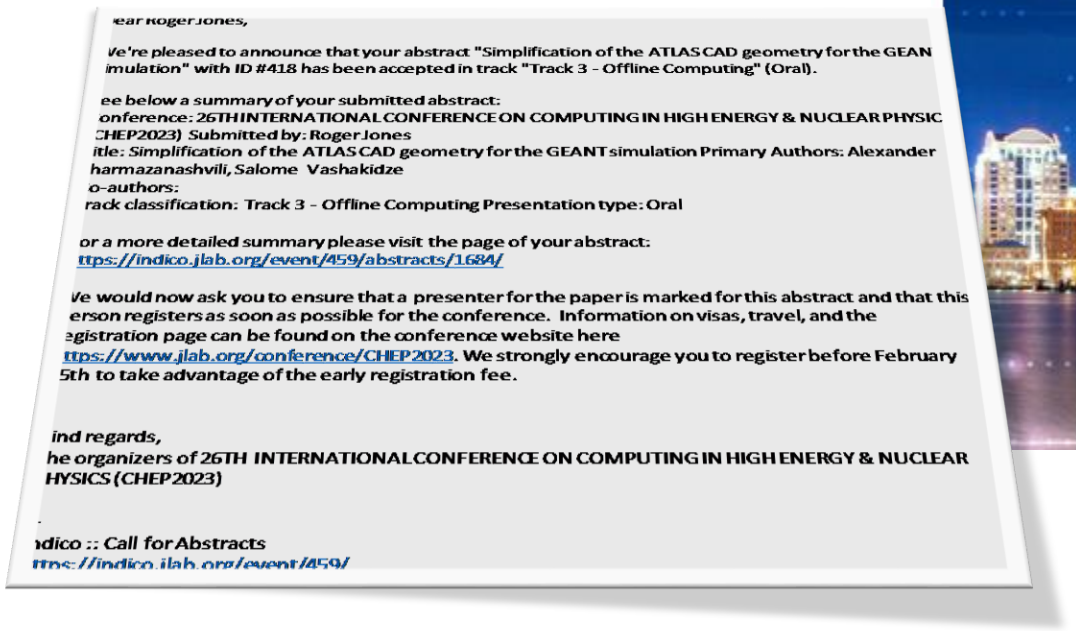
Other Activities

- Participation in the International Conferences on behalf of the ATLAS collaboration:
  1. LHCP2022 : Paper approved by the ATLAS speaker committee. Published in the proceedings
  2. ICHEP2022 : Paper approved by the ATLAS speaker committee
  3. ACAT2022 : Paper approved by the ATLAS speaker committee

10th Edition of the Large Hadron Collider Physics Conference

Other Activities

- Participation in the International Conferences on behalf of the ATLAS collaboration:
  1. CHEP2023 – Paper approved by the CERN Speakers Committee and Conference peer reviewers for the oral presentation



ear Roger Jones,

We're pleased to announce that your abstract "Simplification of the ATLAS CAD geometry for the GEAN imulation" with ID #418 has been accepted in track "Track 3 - Offline Computing" (Oral).

ee below a summary of your submitted abstract:
onference: 26TH INTERNATIONAL CONFERENCE ON COMPUTING IN HIGH ENERGY & NUCLEAR PHYSIC CHEP2023) Submitted by: Roger Jones
itle: Simplification of the ATLAS CAD geometry for the GEANT simulation Primary Authors: Alexander harmazanashvili, Salome Vashakidze
o-authors:
rack classification: Track 3 - Offline Computing Presentation type: Oral

or a more detailed summary please visit the page of your abstract:
ttps://indico.jlab.org/event/459/abstracts/1684/

We would now ask you to ensure that a presenter for the paper is marked for this abstract and that this erson registers as soon as possible for the conference. Information on visas, travel, and the egistration page can be found on the conference website here
ttps://www.jlab.org/conference/CHEP2023. We strongly encourage you to register before February 5th to take advantage of the early registration fee.

ind regards,
he organizers of 26TH INTERNATIONAL CONFERENCE ON COMPUTING IN HIGH ENERGY & NUCLEAR HYSICS (CHEP2023)

ndico :: Call for Abstracts
ttps://indico.jlab.org/event/459/

Thanks!