

Collection of web tools for ATLAS Tile Calorimeter data quality tasks

Juraj Smieško¹ on behalf of the Tile Calorimeter System

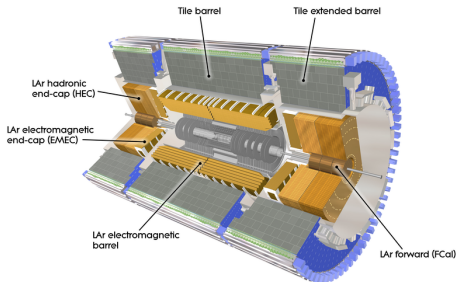
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¹Slovak Academy of Sciences, Slovakia



Tile-in-One Platform

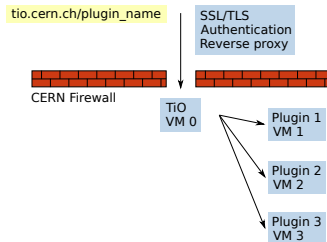


Tile Calorimeter (TileCal)

- Part of the ATLAS hadronic calorimeter [1]
- Detects hadrons, jets and taus
- Contributes to jet energy and missing transverse energy E_T reconstruction
- Assists the spectrometer in the identification and reconstruction of muons
- Sampling calorimeter
 - Active medium – plastic scintillating tiles
 - Absorber – steel plates

Tile-in-One Platform (TiO)

- Collection of independent web applications called plugins
- Main server only routes user requests
- Plugins are separated in their own Virtual Machines (VMs)
- Plugin is based on a template provided by the platform
- Source code is version controlled using Git
- Every plugin is maintained by a person or a group

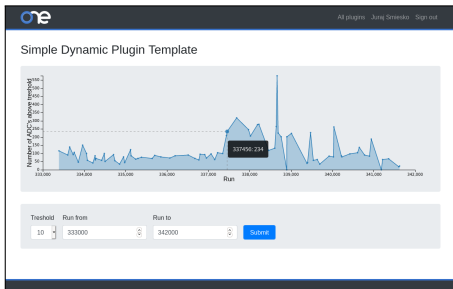


Tile-in-One Plugins

Technologies Employed

| Service/Feature | Technology/Implementation |
|---------------------|-----------------------------------|
| Secure connection | CERN Certification Authority |
| Reverse proxy | Nginx |
| Authentication | CERN OAuth2 & oauth2_proxy [2] |
| User management | oauth2_proxy & TiO plugin |
| Source code hosting | CERN GitLab instance |
| Plugin templates | Static sites, Python & Bottle [4] |
| Monitoring | Monitorix [3] |
| Virtual Machine | CERN OpenStack |
| Plotting | D3.js [5], plotly.js [6] |

Plugin Examples



one All plugins Juraj Smiesko Sign out

List of Plugins

| Plugin | Maintainer | Plugin Type | Machine | Git Repository |
|-------------------------------------|----------------------------------|-----------------------|------------|----------------|
| Monitoring | Juraj Smiesko | Monitorix | 1.1.0 | so-config |
| Simple Static Plugin Template | Sofia Hyrych | Simple Static Plugin | 1.1.0-0001 | so-0001 |
| DOM3 | Michal Racko | Simple Dynamic Plugin | 1.1.0-0002 | so-0002 |
| DQ Validation | Barbora Echerova | Simple Dynamic Plugin | 1.1.0-0003 | so-0003 |
| Documentation | Juraj Smiesko | Simple Dynamic Plugin | 1.1.0-0004 | so-0004 |
| Power Cycling | Juraj Smiesko | Simple Dynamic Plugin | 1.1.0-0005 | so-0005 |
| Simple Dynamic Plugin Template | Sofia Hyrych | Simple Dynamic Plugin | 1.1.0-0006 | so-0006 |
| Simple Noise Calibration | Karl Filip Backman | Simple Dynamic Plugin | 1.1.0-0007 | so-0007 |
| Run List | Juraj Smiesko | Simple Dynamic Plugin | 1.1.0-0008 | so-0008 |
| DQ History | Sofia Hyrych | Simple Dynamic Plugin | 1.1.0-0009 | so-0009 |
| Read Calibration | Samya Solodkov | Simple Dynamic Plugin | 1.1.0-0010 | so-0010 |
| The Conditions Web Server Selection | Eliot Parrish | Simple Dynamic Plugin | 1.1.0-0011 | so-0011 |
| CIS Constant History | Andrew Caldon Smith | Simple Dynamic Plugin | 1.1.0-0012 | so-0012 |
| Laser Monitoring | Rafael Guillermo Oreamuno Madrid | Simple Dynamic Plugin | 1.1.0-0013 | so-0013 |
| TileCal Maintenance Summary | Danijele Bopavac | Simple Dynamic Plugin | 1.1.0-0014 | so-0014 |

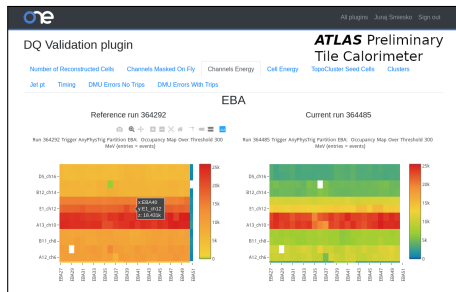
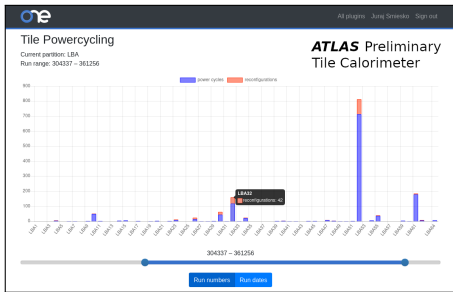
Current Status

- Platform finished, no major issues for more than a year
- Work continues on plugins
- Currently more than 10 plugins in various stages of development
- Python/Bottle based plugin type preferred over simple static site
- Documentation plugin uses simple Markdown files

Tile-in-One Plugins

- Tile Powercycling plugin shows how many times there was a power cycle over a defined period of time
- DQ Validation plugin helps with comparison of data quality histograms between two different runs

More Plugin Examples



References

- [1] Tile Calorimeter Technical Design Report, CERN/LHCC/96-42
- [2] https://github.com/bitly/oauth2_proxy (visited: Jul 2020)
- [3] <https://www.monitorix.org/> (visited: Jul 2020)
- [4] <https://bottlepy.org/> (visited: Jul 2020)
- [5] <https://d3js.org/> (visited: Jul 2020)
- [6] <https://plotly.com/javascript/> (visited: Jul 2020)