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To: ATLAS Physics Coordination

Substructure of Physics Working Groups and organization of work in the subgroups

We think that it is appropriate to introduce a substructure in physics working groups such that the large number of topics can be efficiently dealt with in respective smaller groups. The work in the subgroups should be organized by subgroup convenors, who work in close collaboration with the respective physics group convenors. This brings up the important question of how the work within each group is organized and how the responsibilities are shared. We aim to define these responsibilities in the following.

The role of the Physics Group Convenors

- The physics group convenors define together with the Physics Coordinators the main analysis topics, analysis goals and strategies of the group. In addition, the appropriate structures and the cooperation with other physics and combined performance working groups should be defined.
- The physics group convenors are responsible for a successful realization of the necessary analysis tasks and for the implementation of the defined structures within their group. It is expected that they appoint one convenor for each subgroup (see below) to organize and accomplish the work in the subgroups. For larger groups or in exceptional cases two subgroup convenors might be appointed.
- The physics working group convenors maintain responsibility for the analyses and must follow very closely the activities in all areas of their working group. They organize the common physics group meetings. Important common problems across subgroups must be discussed in these meetings. Regular meetings with all subgroup convenors might be useful.
- The physics group as a whole is responsible for the extraction of physics results and for the release and sign-off of publications to the collaboration. Publications will usually be prepared in physics subgroups, but they must be presented and discussed at the physics group meeting.
- Physics group convenors should ensure full coverage of analysis topics and should arrange for a proper sharing of topics among the subgroups. They should encourage new people to engage in the work of the group and to take on uncovered topics. Lists of ongoing analyses and of people working on the various subjects as well as a list of uncovered topics should be kept.

The role of the subgroups and subgroup convenors

- Subgroups in physics working groups should usually be the forum where the work on specific analyses is carried out and detailed analysis issues are discussed.
- Subgroups might also be set up to address specific topics, e.g. to develop common reconstruction tools which can be shared among various groups or to address and measure background processes which are relevant for various ATLAS physics working groups.
- Subgroup convenors organize the work within the respective subgroups and interact on a day-to-day basis with the analysis teams working on specific topics. They also organize subgroup meetings. Issues of common interest and important results are reported on a regular basis at the physics group meeting (decisions to be taken by physics group convenors or at group convenors meetings).
- Publications and conference contributions are usually to be prepared within the subgroups.
- Subgroup convenors should discuss regularly with group convenors progress of analyses, special concerns, areas of under-coverage and potential conflicts in their subgroups.

Appointment of subgroup convenors

- Subgroup convenors are appointed by the physics group convenors, in consultation with the Physics Coordinators.
- The term of office of a subgroup convenor is normally one year, however, extensions are possible, up to a maximum of three years.
- Given that the subgroup structure needs to be adapted to the analysis needs, subgroups can be opened, merged, split or closed down as agreed by the physics group convenors in consultation with the Physics Coordinators.

II. The Substructure foreseen in Physics Working Groups for Early Data Taking

In the following the present proposal of subgroups in physics working groups –as emerged from discussions with working group convenors and from discussions inside the physics working groups- is presented. The structure shown here is oriented towards the analysis of first data in the years 2008/09.

(i) Standard Model

- QCD group (Minimum bias, jets, diffractive physics,....)
- γ and $\gamma\gamma$ group (γ +jet and $\gamma\gamma$ cross sections,)
- W/Z group (dileptons, Drell-Yan, W/Z cross sections & prod. properties....)
- W/Z + jets (QCD studies, backgrounds for searches)
- Electroweak group (W mass, dibosons, gauge couplings, asymmetries,...)

(ii) Top Physics

- Top reconstruction (ℓ -had, $\ell\ell$, had-had, high-PT top,...)
- Top cross section
- Single top
- Top mass
- Top production properties

(iii) Higgs

- $H \rightarrow \gamma\gamma$ group (gg, VBF)
- $H \rightarrow ZZ^*$ (incl. heavy Higgs bosons)
- WW (gg, VBF, WH, ttH, incl. heavy Higgs bosons and invisibly decaying VBF Higgs bosons)
- Tau final states ($qqH \rightarrow qq\tau\tau$, $A/H \rightarrow \tau\tau$, ($A/H \rightarrow \mu\mu$))
- Complex final states with bs (H^+ , ttH with $H \rightarrow bb$)

(iv) SUSY

- SUSY in $E_{\text{miss}} + X$
- RPV SUSY / displaced vertices
- SUSY stable (on detector scale) particles

(v) Exotics

- Leptons + X
- Jets + X
- Vector Boson Scattering
- Long lived particles^{*}
- Mini Black Holes

(vi) B physics

- Onia production and b cross-section measurements
- Physics with $B \rightarrow J/\psi$
- Rare decays
- Hadronic B decays

(vii) Heavy Ions

No substructure is foreseen at present; During initial pp running a close collaboration with the Minimum bias group is encouraged.

^{*} It is expected that people interested in searches for long lived particle from the SUSY and Exotics groups work together in the combined performance and tracking groups and carry out the analyses in their respective groups. They should be prepared to take a leading role on these topics in the performance and tracking groups since these reconstruction issues might not be the main focus of the groups at the beginning of data taking.