

Update on Requirements

49th Geant4 Technical Forum
March 29th 2019
CERN

Marc Verderi, LLR, Ecole polytechnique
On behalf of the Geant4 Collaboration

Requirements Tracking System Page:
<https://jira-geant4.kek.jp/secure/Dashboard.jspa?selectPageId=10000>

No New requirements

Open requirements

4701 : More realistic matrix element for decays $\tau \rightarrow \nu + \text{hadrons}$

- ◉ Originator:
 - > CMS
 - > 47th Technical Forum ([link](#))
- ◉ Scope:
 - > The current implementation of tau decay to hadrons uses phase space decay.
 - > More realistic matrix elements are requested.
- ◉ Responsible:
 - > Vladimir Ivantchenko
- ◉ Status:
 - > Similar requirement expressed by ATLAS earlier
 - With suggestion to use external decayer
 - > Will contact requester to see if external decayer would be a satisfactory solution.
 - > Open.

4702 : Inclusion of γ polarization effects in the high energy EM models

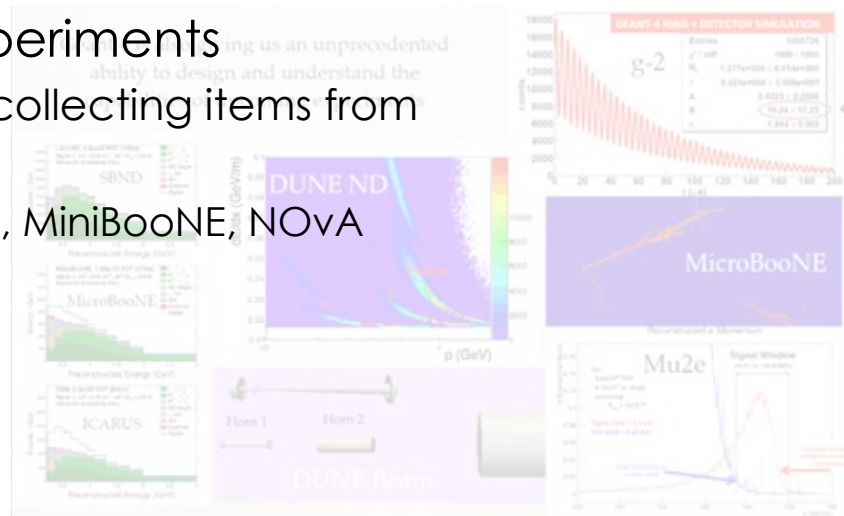
- ◉ Originator:
 - > CMS
 - > 47th Technical Forum ([link](#))
- ◉ Scope:
 - > Include Linear Polarization into HE γ Models
 - > This has potential usage in the analysis of $H \rightarrow \gamma \gamma$
 - Polarization planes of scalar (pseudo-scalar) particle to γ 's are parallel (perpendicular)
 - Investigate the effect of polarization in the shower shape of photons
 - May give additional handles to distinguish direct γ 's from H decay from BG
- ◉ Responsible:
 - > Vladimir Ivantchenko
- ◉ Status:
 - > In this year work plan.
 - Development will require several years.
 - > Open.

4703 : Improved light nucleon production in FTFP_BERT

- ⊙ Originator:
 - > ALICE
 - > Lund Geant4 CM, requirements session ([link](#))
- ⊙ Scope:
 - > ALICE switched to FTFP_INCLXX physics lists
 - Because FTFP_BERT –recommended for calorimetry- has a deficit of light nuclei (d, t, 3He) production from secondary particles
 - > But FTFP_INCLXX brings a performance penalty
 - > Request to get the light nucleon production in FTFP_BERT improved
 - and keep the support for FTFP_INCLXX physics list, until ALICE can switch back to FTFP_BERT
- ⊙ Responsible:
 - > Alberto Ribbon, Dennis Wright
- ⊙ Status:
 - > In this year development plan.
 - > Open.

4002 : Reweightable uncertainties for systematic uncertainties estimation

- Requester: Intensity Frontier FNAL experiments
 - Request made at 40th TF @ FNAL ([link](#)) , collecting items from
 - Muon : g-2, Mu2e
 - Neutrino : DUNE, MicroBooNE, MINERvA, MiniBooNE, NOvA
 - Fixed Target : SeaQuest
 - Test Beam : LArLAT
- Responsible:
 - Soon Yung Jun
- Scope:
 - The technique allows to estimate the effect of model uncertainties on observables with a single MC sample
 - Model uncertainties provided under guidance of experts
 - Suggested from usability of GENIE Neutrino MC Generator
- Status:
 - A note is circulated among the developers, will be made available soon.
 - Work will be presented at ACAT19
 - Open.



No Recently closed
requirements