Pull request and issue summary for acts-project/acts

July 9, 2024

Needs discussion I

- ⊙ **TrackAtVertex trackWeight is not being written in IVF** (#2149)
  by @andiwand

During my work on the vertexing I noticed that the 'trackWeight' of 'TrackAtVertex'
https://github.com/acts-project/acts/blob/main/Core/include/Acts/Vertexing/TrackAtVertex.hpp#L69
default of '1' is never being overwritten in the IVF. Not sure if this is intended but it seems very odd.

acts-project/acts: PRs merged between 2024-07-02 and 2024-07-09 I

- ► ⌥ **fix(vertexing): IterativeVertexFinder config takes const field** (#3341)
  by @paulgessinger, ✅ reviewed by @andiwand, merged on 2024-07-02

- ► ⌥ **build(deps): bump actions/labeler from 4 to 5** (#3291)
  by @dependabot[bot], ✅ reviewed by @andiwand, merged on 2024-07-02

- ► ⌥ **ci(release): Replace release script with git cliff** (#3322)
  by @paulgessinger, ✅ reviewed by @andiwand, merged on 2024-07-03

- ► ⌥ **feat: GSF Debugger** (#2682)
  by @benjaminhuth, ✅ reviewed by @paulgessinger, merged on 2024-07-03

- ► ⌥ **fix: Unit test hough transform and fix identifier bug** (#3332)
  by @dimitra97, ✅ reviewed by @andiwand, merged on 2024-07-03

- ► ⌥ **ci: Bump histcmp to v0.6.6** (#3347)
  by @paulgessinger, ✅ reviewed by @stephenswat, merged on 2024-07-03

- ► ⌥ **refactor!: BinningValue becomes a strong enum** (#3337)
  by @paulgessinger, ✅ reviewed by @andiwand, merged on 2024-07-03

- ► ⌥ **refactor: Do not allocate memory if the surface is connected with a detector el...** (#3069)
  by @junggjo9, ✅ reviewed by @andiwand, merged on 2024-07-03

acts-project/acts: PRs merged between 2024-07-02 and 2024-07-09 II

- ► **build: Public Header Relocatability, main branch (2024.06.18.)** (#3303)
  by @krasznaa, ✅ reviewed by @paulgessinger, merged on 2024-07-03

- ► **refactor: cleaning the code for filling cylindrical grid** (#3344)
  by @CarloVarni, ✅ reviewed by @andiwand, merged on 2024-07-04

- ► **feat: Silence excessive verbosity of the IVF Algorithm in Examples** (#3343)
  by @pbutti, ✅ reviewed by @paulgessinger, merged on 2024-07-04

- ► **feat: Detray plugin geometry** (#3299)
  by @EleniXoch, ✅ reviewed by @asalzburger, merged on 2024-07-04

- ► **fix: fixing macOS (arm64) build by including ostream** (#3350)
  by @asalzburger, ✅ reviewed by @andiwand, merged on 2024-07-05

- ► **ci: Update CI job to newer OS (drop ubuntu 20.04, centos7/8)** (#3227)
  by @AJPfleger, ✅ reviewed by @benjaminhuth, merged on 2024-07-05

- ► **fix: GeoModel plugin** (#3351)
  by @asalzburger, ✅ reviewed by @benjaminhuth, merged on 2024-07-05

- ► **refactor!: Rewrite 'BoundaryCheck'; Rename to 'BoundaryTolerance' and split out inside checks**
  (#3170)
  by @andiwand, ✅ reviewed by @paulgessinger, merged on 2024-07-06

▶ ⎇ **fix: Re-enable Exa.TrkX build without CUDA, make configuration explicit** (#3353)
by @benjaminhuth, ✅ reviewed by @paulgessinger, merged on 2024-07-08

▶ ⎇ **ci: Switch macOS build to use CMake-based dependencies** (#3346)
by @paulgessinger, ✅ reviewed by @benjaminhuth, merged on 2024-07-08

▶ ⎇ **feat: Add 'nCleanVtx' to 'VertexPerformanceWriter' in Examples** (#3352)
by @andiwand, ✅ reviewed by @benjaminhuth, merged on 2024-07-09

acts-project/acts: Open PRs I

- 🔀 **feat: Prototracks-to-Tracks converter & refactor** (#3357)
  by @benjaminhuth, ✅ reviewed by @andiwand, updated on 2024-07-09

- 🔀 **feat: covfie plugin** (#3117)
  by @fredevb, ✅ comment by @paulgessinger, updated on 2024-07-09

- 🔀 **refactor!: Use track container in Core 'CKF' and pass track proxies to delegates** (#3161)
  by @andiwand, ✅ comment by @andiwand, updated on 2024-07-09

- 🔀 **feat: Hashing seeding algorithm** (#3148)
  by @CouthuresJeremy, ✅ comment by @CouthuresJeremy, updated on 2024-07-09

- 🔀 **refactor!: Split propagator options** (#3181)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-07-09

- 🔀 **refactor: Truth graph metrics for Exa.TrkX with separate algorithm** (#3354)
  by @benjaminhuth, ❌ changes requested by @andiwand, updated on 2024-07-09

- 🔀 **feat: Select space points used to fill the seeding grid via delegate function. Add experimentCuts support** (#3342)
  by @pbutti, ✅ reviewed by @andiwand, updated on 2024-07-09

acts-project/acts: Open PRs II

- ⑂ **refactor: Cluster features for GNN pipeline** (#3356)
  by @benjaminhuth, ✅ reviewed by @andiwand, updated on 2024-07-09

- ⑂ **refactor!: Track EDM brush over** (#3192)
  by @andiwand, ✅ comment by @andiwand, updated on 2024-07-09

- ⑂ **feat: Introduce the usage of the geomodel converters for the Muon System** (#3348)
  by @dimitra97, ✅ comment by @dimitra97, updated on 2024-07-09

- ⑂ **ci: Re-enable the Examples unit tests in the CI** (#3355)
  by @paulgessinger, ⚠️ **no reviewer**, updated on 2024-07-09

- ⑂ **refactor!: Refactor navigator options** (#3182)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-07-08

- ⑂ **refactor!: Refactor direct navigator initialization** (#3183)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-07-08

- ⑂ **build: Bump minimum required C++ standard to 20** (#3345)
  by @paulgessinger, ⚠️ **no reviewer**, updated on 2024-07-08

- ⑂ `Stale` **feat: Geometry agnostic space point maker** (#2890)
  by @AlonI14, ⚠️ **no reviewer**, updated on 2024-07-06

acts-project/acts: Open PRs III

- ⑂ **feat: Telescope style seeding** (#3300)
  by @ssdetlab, ⚠️ **no reviewer**, updated on 2024-07-06

- ⑂ **feat!: Resurrect original 'AdaptiveGridTrackDensity'; Move new impl to 'SparseGridTrackDensity'** (#3340)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-07-06

- ⑂ **ci: Add GeoModel Plugin to CI** (#3327)
  by @benjaminhuth, ❌ changes requested by @paulgessinger, updated on 2024-07-06

- ⑂ **refactor: Make the MagneticFieldContext & GeometryContext to be hard types** (#3349)
  by @junggjo9, ❌ changes requested by @andiwand, updated on 2024-07-06

- ⑂ **refactor: path handling to use 'std::filesystem'** (#3308)
  by @AJPfleger, ❌ changes requested by @stephenswat, updated on 2024-07-06

- ⑂ **feat: GeoShapes to DetectorVolumes and GeoMaterial Converters** (#3268)
  by @Matthewharri, ✅ comment by @Matthewharri, updated on 2024-07-04

- ⑂ **fix: update the DD4hep requirements when the ODD is built** (#3330)
  by @Corentin-Allaire, ✅ comment by @Corentin-Allaire, updated on 2024-06-28

acts-project/acts: Open PRs IV

- ▶ ⑂ `Stale` **refactor: Use Core CKF extrapolation after inwards extension** (#3195)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-21

- ▶ ⑂ **feat: traccc chain in examples (common chain logic and CPU chain)** (#3320)
  by @fredevb, ⚠️ **no reviewer**, updated on 2024-06-21

- ▶ ⑂ **refactor: change the definition of the rotation parameters** (#2021)
  by @XiaocongAi, ✅ reviewed by @paulgessinger, updated on 2024-06-21

- ▶ ⑂ **style: Update clang-format to v18** (#3319)
  by @stephenswat, ⚠️ **no reviewer**, updated on 2024-06-20

- ▶ ⑂ **feat: traccc plugin (conversion)** (#3281)
  by @fredevb, ✅ comment by @paulgessinger, updated on 2024-06-20

- ▶ ⑂ `Stale` **feat: introduction obj simhit writer** (#3180)
  by @asalzburger, ⚠️ **no reviewer**, updated on 2024-06-15

- ▶ ⑂ **feat: Misalignment shift and test check that only selected modules are shifted** (#2843)
  by @LaraCalic, ✅ comment by @paulgessinger, updated on 2024-06-14

- ▶ ⑂ **test: Add option to only build matching unittests** (#3233)
  by @benjaminhuth, ✅ comment by @benjaminhuth, updated on 2024-06-14

acts-project/acts: Open PRs V

- ⑂ **refactor: Move MLAmbiguitySolver to Core** (#3272)
  by @Corentin-Allaire, ⚠️ **no reviewer**, updated on 2024-06-11

- ⑂ **refactor!: Seed filter container policy** (#3136)
  by @CouthuresJeremy, ✅ comment by @CouthuresJeremy, updated on 2024-06-10

- ⑂ **refactor!: Move 'Navigator' external surfaces into options** (#3189)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-10

- ⑂ 🚧 WIP **refactor: Rework physics performance monitoring for Examples** (#3359)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-07-09

- ⑂ 🚧 WIP **feat: Improve Athena Dump reader** (#3358)
  by @benjaminhuth, ✅ comment by @benjaminhuth, updated on 2024-07-09

- ⑂ 🚧 WIP Stale **refactor!: Template on track container frontend 'TrackContainer'** (#3193)
  by @andiwand, ✅ comment by @paulgessinger, updated on 2024-07-05

- ⑂ 🚧 WIP **feat!: Space point implementation** (#1900)
  by @CarloVarni, ✅ comment by @paulgessinger, updated on 2024-07-04

acts-project/acts: Open PRs VI

- ⑂ 🚧 WIP **feat: Variable size measurement for Examples** (#3107)
  by @andiwand, ✅ comment by @paulgessinger, updated on 2024-07-02

- ⑂ 🚧 WIP **fix: SonarQube fixes as follow up to #3337** (#3339)
  by @paulgessinger, ⚠️ **no reviewer**, updated on 2024-07-01

- ⑂ 🚧 WIP Stale **refactor: Remove target volume estimation from 'Navigator'** (#3242)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-07-01

- ⑂ 🚧 WIP **test: Test field invariance of direction uncertainty transport** (#2983)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-27

- ⑂ 🚧 WIP **feat: Reverse track finding for Examples** (#3200)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-27

- ⑂ 🚧 WIP **tmp: Test pixel/strip hole branch stopper in Examples track finding** (#3273)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-25

- ⑂ 🚧 WIP **feat(gx2f): material effects - multiple scattering** (#3292)
  by @AJPfleger, ⚠️ **no reviewer**, updated on 2024-06-23

acts-project/acts: Open PRs VII

- ⚠️ **WIP** **refactor: add geohook for fast digitization range selection to itk example** (#2089)
  by @niermann999, ⚠️ **no reviewer**, updated on 2024-06-22

- ⚠️ **WIP** **refactor!: Surface returns transform by value** (#2527)
  by @asalzburger, ⚠️ **no reviewer**, updated on 2024-06-22

- ⚠️ **WIP** **feat: Covariance transport for dense propagation** (#2869)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-21

- ⚠️ **WIP** **refactor: Some internal GSF refactorings** (#2697)
  by @benjaminhuth, ❌ changes requested by @andiwand, updated on 2024-06-21

- ⚠️ **WIP** **refactor: Bump min json ver, make json keys static** (#2968)
  by @paulgessinger, ⚠️ **no reviewer**, updated on 2024-06-21

- ⚠️ **WIP** **feat: Add CMake presets** (#3135)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-21

- ⚠️ **WIP** **feat: Add Frustum/Octree Navigation** (#3306)
  by @Matthewharri, review requestedreview requested, updated on 2024-06-20

acts-project/acts: Open PRs VIII

- 🔀 **WIP** **refactor: Remove 'lastHierarchySurfaceReached' from 'Navigator'** (#3237)
  by @andiwand, ✅ reviewed by @paulgessinger, updated on 2024-06-14

- 🔀 **WIP** Stale **refactor: Replace 'EigenStepper' extension list with single extension** (#2865)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-14

- 🔀 **WIP** **refactor: Remove 'forceIntersectBoundaries' from 'Navigator'** (#3238)
  by @andiwand, ✅ reviewed by @benjaminhuth, updated on 2024-06-13

- 🔀 **WIP** **refactor: Resolve surfaces on initialization in 'Navigator'** (#3283)
  by @andiwand, ⚠️ **no reviewer**, updated on 2024-06-13

- 🔀 **WIP** **fix(gx2f): use all states for 'jacobianFromStart'** (#3274)
  by @AJPfleger, ⚠️ **no reviewer**, updated on 2024-06-12

- 🔀 **WIP** **feat: Add per event timing** (#3124)
  by @CouthuresJeremy, ✅ comment by @andiwand, updated on 2024-06-11

- 🔀 **WIP** **feat: geo model detector elements, converters and plugins** (#3213)
  by @asalzburger, ✅ comment by @benjaminhuth, updated on 2024-06-11

- 🔀 🚧 WIP Stale **feat: Add GSF component momentum cut to stabilize fit** (#2661)
  by @benjaminhuth, ✅ comment by @benjaminhuth, updated on 2024-05-25

- ⊙ Stale **bug: navigation suggests 'pathCorrection=inf' on cylinderSurface** (#3267)
  by @AJPfleger, updated on 2024-07-07

- ⊙ Stale **Project build flags are difficult to control (2024.05.29.)** (#3231)
  by @krasznaa, updated on 2024-07-04

- ⋔ 🚧 WIP Stale **refactor!: Template on track container frontend 'TrackContainer'** (#3193)
  by @andiwand, ⚠ **no reviewer**, updated on 2024-07-05

- ⋔ Stale **feat: Geometry agnostic space point maker** (#2890)
  by @Alonl14, ⚠ **no reviewer**, updated on 2024-07-06

acts-project/acts: All stale Issues / PRs I

- ▶ ⊙ `Stale` **bug: navigation suggests 'pathCorrection=inf' on cylinderSurface** (#3267)
  by @AJPfleger, updated on 2024-07-07

- ▶ ⑄ `Stale` **feat: Geometry agnostic space point maker** (#2890)
  by @Alonl14, ⚠ **no reviewer**, updated on 2024-07-06

- ▶ ⑄ `⚒ WIP` `Stale` **refactor!: Template on track container frontend 'TrackContainer'** (#3193)
  by @andiwand, ⚠ **no reviewer**, updated on 2024-07-05

- ▶ ⊙ `Stale` **Project build flags are difficult to control (2024.05.29.)** (#3231)
  by @krasznaa, updated on 2024-07-04

- ▶ ⑄ `⚒ WIP` `Stale` **refactor: Remove target volume estimation from 'Navigator'** (#3242)
  by @andiwand, ⚠ **no reviewer**, updated on 2024-07-01

- ▶ ⊙ `Stale` **[bug] Off axis endcap with dd4hep plugin.** (#942)
  by @whit2333, updated on 2024-06-26

- ▶ ⊙ `Stale` **Debug Information in Acts Seeder** (#944)
  by @osbornjd, updated on 2024-06-26

acts-project/acts: All stale Issues / PRs II

- ▶ ⊙ Stale **Reproducibility test using hash checks for non-linear KF** (#1246)
  by @paulgessinger, updated on 2024-06-25

- ▶ ⊙ Stale **Documentation update: Core** (#1418)
  by @paulgessinger, updated on 2024-06-25

- ▶ ⊙ Stale **Documentation: hints for debugging** (#1463)
  by @timadye, updated on 2024-06-25

- ▶ ⊙ Stale **Add Primary Vertex Label to tracks** (#1544)
  by @Lucas-Borgna, updated on 2024-06-25

- ▶ ⊙ Stale **Create volume restricted BFieldMap** (#1659)
  by @asalzburger, updated on 2024-06-25

- ▶ ⊙ Stale **Cmake error if ACTS_BUILD_PLUGIN_ACTSVG=ON** (#1818)
  by @DraTeots, updated on 2024-06-25

- ▶ ⊙ Stale **LCG compatibility** (#2054)
  by @paulgessinger, updated on 2024-06-25

- ▶ ⊙ Stale **EstimateTrackParamsFromSeed does not use time of measurement** (#2136)
  by @andiwand, updated on 2024-06-25

acts-project/acts: All stale Issues / PRs III

- ▶ ⊙ Stale **TrackAtVertex trackWeight is not being written in IVF** (#2149)
  by @andiwand, updated on 2024-06-25

- ▶ ⊙ Stale **Construct tracking geometry from python** (#2173)
  by @andiwand, updated on 2024-06-25

- ▶ ⊙ Stale **Missing 'cmake_minimum_required' in 'ActsConfig.cmake.in'** (#2216)
  by @andiwand, updated on 2024-06-25

- ▶ ⊙ Stale **Bug: not all tracks have fittedMomentum** (#2364)
  by @felix-russo, updated on 2024-06-25

- ▶ ⊙ Stale **Bug: AMVF 'deleteLastVertex' might be wrong** (#2380)
  by @andiwand, updated on 2024-06-25

- ▶ ⊙ Stale **[Bug] Fatras can't seem to handle energy loss for electrons on thin surfaces** (#2498)
  by @janheinri, updated on 2024-06-25

- ▶ ⊙ Stale **[Feature Request] Padding utility for field map in case tracking volume is larger than a given field map** (#2523)
  by @janheinri, updated on 2024-06-25

- ▶ ⊙ Stale **Bug: Fatras sets step size to 0** (#2543)
  by @andiwand, updated on 2024-06-25

acts-project/acts: All stale Issues / PRs IV

- ⊙ Stale **Ensure Fitters use all provided measurements** (#2737)
  by @andiwand, updated on 2024-06-25

- ⑃ Stale **refactor: Use Core CKF extrapolation after inwards extension** (#3195)
  by @andiwand, ⚠ **no reviewer**, updated on 2024-06-21

- ⊙ Stale **bug: KF verbosity statement** (#3097)
  by @osbornjd, updated on 2024-06-20

- ⑃ Stale **feat: introduction obj simhit writer** (#3180)
  by @asalzburger, ⚠ **no reviewer**, updated on 2024-06-15

- ⑃ 🚧 WIP Stale **refactor: Replace 'EigenStepper' extension list with single extension** (#2865)
  by @andiwand, ⚠ **no reviewer**, updated on 2024-06-14

- ⊙ Stale **EDM Memory usage** (#1516)
  by @paulgessinger, updated on 2024-05-25

- ⊙ Stale **Detailed timing per event** (#1700)
  by @CouthuresJeremy, updated on 2024-05-25

- ▶ 🔀 🚧 WIP Stale **feat: Add GSF component momentum cut to stabilize fit** (#2661)
  by @benjaminhuth, ⚠️ **no reviewer**, updated on 2024-05-25

- ▶ ⊙ Stale **Question: Set a different value of eta range using ODD** (#2776)
  by @rubihason, updated on 2024-05-25

- ▶ ⊙ Stale **Write Fatras documentation** (#2796)
  by @andiwand, updated on 2024-05-25

- ▶ ⊙ Stale **bug: documentation always builds in '<source>'** (#2798)
  by @AJPfleger, updated on 2024-05-25

- ▶ ⊙ Stale **bug: IVF is throwing errors in ODD full chain** (#3120)
  by @andiwand, updated on 2024-05-18

- ▶ ⊙ Stale **Documentation on geometry misalignments** (#2940)
  by @paulgessinger, updated on 2024-05-17

- ▶ ⊙ Stale **Bug: material map auto tuning only considers the "Default" mapping type** (#2942)
  by @plariono, updated on 2024-05-17

- ▶ ⊙ Stale **bug: some dependencies in setup script wrong** (#3014)
  by @AJPfleger, updated on 2024-05-17

acts-project/acts: All stale Issues / PRs VI

- ▶ ⊙ Stale **perf: CKF measurement selector runs after track state creation** (#3081)
  by @andiwand, updated on 2024-05-05

- ▶ ⊙ Stale **perf: CKF general** (#3082)
  by @andiwand, updated on 2024-05-05

- ▶ ⊙ Stale **Some 'toStream' implementations change the state of 'std::ostream'** (#3079)
  by @andiwand, updated on 2024-05-04

- ▶ ⊙ Stale **HepMC plugin looks incomplete** (#3050)
  by @andiwand, updated on 2024-04-26

- ▶ ⊙ Stale **'EigenStepper' (and extensions) cannot be easily extended for dense environment covariance transport** (#2868)
  by @andiwand, updated on 2024-03-20

- ▶ ⊙ Stale **'Stepper' and 'Navigator' cannot be configured by 'PropagatorOptions'** (#2861)
  by @andiwand, updated on 2024-02-09

- ▶ ⊙ Stale **Fitters use 'PropagatorPlainOptions' and not 'PropagatorOptions'** (#2862)
  by @andiwand, updated on 2024-02-09

- ▶ ⊙ Stale **'AdaptiveGridTrackDensity' has a hidden 'd0' cut** (#2840)
  by @andiwand, updated on 2024-01-17

acts-project/acts: All stale Issues / PRs VII

- ▶ ⊙ Stale **Duplication in 'AdaptiveGridTrackDensity' and 'GaussianGridTrackDensity'** (#2841)
  by @andiwand, updated on 2024-01-17

- ▶ ⊙ Stale **EDM4hep parameter conversion should use jacobians directly** (#2813)
  by @paulgessinger, updated on 2024-01-11

- ▶ ⊙ Stale **'Surface::boundToFreeJacobian' could also use 'FreeVector' parameters** (#2810)
  by @andiwand, updated on 2024-01-10

- ▶ ⊙ Stale **Telescope detector cookbook** (#2800)
  by @paulgessinger, updated on 2024-01-10

- ▶ ⊙ Stale **Write CKF documentation** (#2794)
  by @paulgessinger, updated on 2024-01-10

- ▶ ⊙ Stale **Add description of Blueprint tree and how it can be used to create layerless detector.** (#2785)
  by @paulgessinger, updated on 2024-01-10

- ▶ ⊙ Stale **Describe replacements of TrackingGeometry, TrackingVolume etc and how the classes map to one another.** (#2786)
  by @paulgessinger, updated on 2024-01-10

acts-project/acts: All stale Issues / PRs VIII

- ▶ ⊙ Stale **Describe how the legacy geometry used to work and how it differs from the layerless geometry** (#2787)
  by @paulgessinger, updated on 2024-01-10

- ▶ ⊙ Stale **'SurfaceReached' aborter is messing with the step size** (#2738)
  by @andiwand, updated on 2023-12-28

- ▶ ⊙ Stale **Propagation state cannot be initialized outside the propagation** (#2736)
  by @andiwand, updated on 2023-12-28

- ▶ ⊙ Stale **FPE: AMVF keepNewVertex** (#2590)
  by @andiwand, updated on 2023-11-26

- ▶ ⊙ Stale **Track finding rework** (#2320)
  by @paulgessinger, updated on 2023-11-11

- ▶ ⊙ Stale **Propagator step count limit reached and Step size adjustment exceeds maximum trials** (#2469)
  by @CarloVarni, updated on 2023-11-11

- ▶ ⊙ Stale **[Feature Request] Reference surface for tracking algorithm is hardcoded to be at origin** (#2525)
  by @janheinri, updated on 2023-11-09

- ▶ ⊙ Stale **Incorrect material interaction in backward propagation ?** (#2429)
  by @Corentin-Allaire, updated on 2023-10-06

- ▶ ⊙ Stale **Expand TrackingGeometry building from DD4hep with user given input** (#2403)
  by @asalzburger, updated on 2023-09-27

- ▶ ⊙ Stale **FPE: Bethe-Heithler gamma_distribution** (#2346)
  by @paulgessinger, updated on 2023-09-03

- ▶ ⊙ Stale **FPE: GaussianMixtureReduction** (#2347)
  by @paulgessinger, updated on 2023-09-03

- ▶ ⊙ Stale **FPE: RootTrajectoryStatesWriter** (#2348)
  by @paulgessinger, updated on 2023-09-03

- ▶ ⊙ Stale **FPE: RootTrajectorySummaryWriter** (#2284)
  by @paulgessinger, updated on 2023-08-12

- ▶ ⊙ Stale **Inconsistent use of 'VolumeMaterialInteraction' thickness** (#2279)
  by @andiwand, updated on 2023-08-05

- ▶ ⊙ Stale **Move some Digitization code from FATRAS to Core?** (#2230)
  by @benjaminhuth, updated on 2023-07-28

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- ▶ ⊙ Stale **MultiTrajectory buffer default constructible** (#2154)
  by @tboldagh, updated on 2023-07-20

- ▶ ⊙ Stale **Track nDoF only returns the sum of calibrated size and not the actual DoFs.** (#2076)
  by @pbutti, updated on 2023-06-22

- ▶ ⊙ Stale **Track parameter estimation algorithm return parameter on the first seed SP surface** (#2037)
  by @Corentin-Allaire, updated on 2023-05-25

- ▶ ⊙ Stale **Expose individual steps of track reconstruction in full_chain python scripts** (#1997)
  by @tboldagh, updated on 2023-05-20

- ▶ ⊙ Stale **Different results for full_chain_itk when running locally vs lxplus** (#1819)
  by @CarloVarni, updated on 2023-05-09

- ▶ ⊙ Stale **Bug: Probable Issues in Bevelled Cylinder Implementation** (#1238)
  by @rahmans1, updated on 2023-05-09

- ▶ ⊙ Stale **Physmon throws many WARNINGs on Bethe-Heitler approximation** (#1748)
  by @paulgessinger, updated on 2023-05-09

- ▶ ⊙ Stale **SpacePoint EDM design** (#1971)
  by @CarloVarni, updated on 2023-05-09

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- ▶ ⊙ `Stale` **vertex fitting and duplicate tracks** (#1992)
  by @rubihason, updated on 2023-05-09

- ▶ ⊙ `Stale` **Estimate Track Parameters from Seeds use only one surface. What about strips?** (#1895)
  by @CarloVarni, updated on 2023-05-09

- ▶ ⊙ `Stale` **Bug: Unpredicatable navigation in layer with overlapping surface** (#1852)
  by @Corentin-Allaire, updated on 2023-03-25

- ▶ ⊙ `Stale` **Make central minimum track momentum threshold** (#1761)
  by @paulgessinger, updated on 2023-01-21

- ▶ ⊙ `Stale` **Optimal seeding parameters for a detector** (#1699)
  by @CouthuresJeremy, updated on 2023-01-05

- ▶ ⊙ `Stale` **Particle smearing assertion with Geant4** (#1603)
  by @benjaminhuth, updated on 2022-12-21

- ▶ ⊙ `Stale` **Documentation update: Examples** (#1420)
  by @paulgessinger, updated on 2022-11-23

- ▶ ⊙ `Stale` **Documentation update: How-to (core)** (#1422)
  by @paulgessinger, updated on 2022-11-23

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- ▶ ⊙ `Stale` **Documentation update: Plugins** (#1421)
  by @paulgessinger, updated on 2022-10-22

- ▶ ⊙ `Stale` **Vertexing produces vertex candidates that are unreasonable** (#1361)
  by @paulgessinger, updated on 2022-10-22

- ▶ ⊙ `Stale` **Optionally have the vertex finding recalculate perigee parameters relative to consistent reference** (#1482)
  by @paulgessinger, updated on 2022-10-01

- ▶ ⊙ `Stale` **Full chain vertexing with AMVF** (#1406)
  by @paulgessinger, updated on 2022-10-01

- ▶ ⊙ `Stale` **Vertexing produces unexpectedly poor efficiency** (#1362)
  by @paulgessinger, updated on 2022-09-20

- ▶ ⊙ `Stale` **Ambiguous perigees with low momentum** (#1386)
  by @andiwand, updated on 2022-09-20

- ▶ ⊙ `Stale` **Fatras: Bethe-Heitler calculation wrong?** (#1437)
  by @asalzburger, updated on 2022-09-20

- ▶ ⊙ `Stale` **Some writers performs their writes in the destructor** (#881)
  by @paulgessinger, updated on 2022-08-11

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- ▶ ⊙ Stale **Vertexing issues observed in python vertexing example** (#1091)
  by @paulgessinger, updated on 2022-08-11

- ▶ ⊙ Stale **Magnetic Field Storage** (#1239)
  by @osbornjd, updated on 2022-06-12

- ▶ ⊙ Stale **Cut tube segment dd4hep conversion tests** (#1146)
  by @rahmans1, updated on 2022-05-25

- ▶ ⊙ Stale **Bug: issue on first build after DD4hep update on system with globaly installed acts** (#1139)
  by @gagnonlg, updated on 2022-02-22

- ▶ ⊙ Stale **Add example (+test) for vertex fitting with constraints** (#1100)
  by @paulgessinger, updated on 2022-01-07

- ▶ ⊙ Stale **Should seed finding tools have a higher-level interface?** (#988)
  by @stephenswat, updated on 2021-11-25

- ▶ ⊙ Stale **Improvement: Estimate track parameters from seed at perigee surface** (#1036)
  by @XiaocongAi, updated on 2021-11-10

- ▶ ⊙ Stale **Tracking for TPC/DC without surfaces** (#165)
  by @FabianKlimpel, updated on 2021-11-04

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▶ ⊙ Stale **BoundingBox tests fail on double precision** (#752)
by @paulgessinger, updated on 2021-11-04