
















Pull request and issue summary for acts-project/acts

July 4, 2023

















Needs discussion I

- ▶  **Missing 'cmake_minimum_required' in 'ActsConfig.cmake.in' (#2216)**
by @andiwand



see <https://github.com/acts-project/acts/pull/2186#issuecomment-1589289515> in
<https://github.com/acts-project/acts/pull/2186> and mattermost discussion here
<https://mattermost.web.cern.ch/acts/pl/car8fopz4bn3mjgt61megc13we>

















- ▶  **ci: Add Unit Test paths to auto-labeler (#2242)**
by @paulgessinger,  reviewed by @andiwand, merged on 2023-06-27
- ▶  **fix: missing include of array in FpeMonitor.hpp (#2247)**
by @CarloVarni,  reviewed by @andiwand, merged on 2023-06-27
- ▶  **fix: Fix FPEOVF in 'RootParticleWriter' (#2241)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-06-28
- ▶  **fix: Quick fix 'LineSurface' tolerance inconsistency in 'globalToLocal' (#2239)**
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-06-28
- ▶  **refactor: Testing HelicalTrackLinearizer by comparing its Jacobians to numerically computed derivatives (#2141)**
by @felix-russo,  comment by @felix-russo, merged on 2023-06-28
- ▶  **refactor: Move 'ParticleData' from Fatras to Core (#2233)**
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-06-28
- ▶  **feat: draw measurements in e.g. '.obj', refactor and update unittests (#2229)**
by @AJPfleger,  reviewed by @asalzburger, merged on 2023-06-28

acts-project/acts: PRs merged between 2023-06-27 and 2023-07-04 II

















- ▶  **fix: Prototracks to seeds spacepoint livetime (#2244)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-06-29
- ▶  **fix: More friendly large etas (#2249)**
by @pbalek,  reviewed by @andiwand, merged on 2023-06-29
- ▶  **refactor: Explicit direction parameter instead of momentum for Surface interface (#2250)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-06-30
- ▶  **refactor: 'qOverP' and 'absoluteMomentum' for Stepper interface (#2253)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-06-30
- ▶  **docs: Ignore if 'eigen.tuxfamily.org' is online (#2256)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-07-03
- ▶  **chore: Improve CMake formatting (#2255)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-07-03
- ▶  **ci: Add Folder with hashes to the labeler paths (#2257)**
by @CarloVarni,  reviewed by @andiwand, merged on 2023-07-03
- ▶  **fix: acts-logo rendered differently on different platforms (#2259)**
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-07-04

acts-project/acts: PRs merged between 2023-06-27 and 2023-07-04 III

















- ▶  **refactor: Drop bool conversion in favor of 'isAlive' method in 'Fatras::Particle' (#2266)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-07-04

- ▶  **feat: Add ability to remove secondaries in 'ParticleSelector'** (#2265)
by @andiwand,  **no reviewer**, updated on 2023-07-04
- ▶  **refactor: Rename 'Single*TrackParameters' to 'Generic*TrackParameters'** (#2269)
by @andiwand,  **no reviewer**, updated on 2023-07-04
- ▶  **fix: Remove potential FPE in 'RootTrajectorySummaryWriter'** (#2260)
by @andiwand,  comment by @paulgessinger, updated on 2023-07-04
- ▶  **refactor: 'RootTrajectorySummaryWriter' use 'qOverP' from particle** (#2271)
by @andiwand,  **no reviewer**, updated on 2023-07-04
- ▶  **feat: 'TrackingGeometry' gains 'shared_ptr' world volume accessor** (#2262)
by @andiwand,  reviewed by @paulgessinger, updated on 2023-07-04
- ▶  **refactor: Factorize track selector tool from algorithm** (#2267)
by @paulgessinger,  reviewed by @andiwand, updated on 2023-07-04
- ▶  **fix: Fix some Geant4 \leftrightarrow Acts unit conversions** (#2264)
by @andiwand,  **no reviewer**, updated on 2023-07-04
- ▶  **fix: Improve full chain pulls towards standard normal distribution** (#2086)
by @andiwand,  reviewed by @pbutti, updated on 2023-07-04






















acts-project/acts: Open PRs II

- ▶  **feat: Remove secondary particles in Geant4 simulation (#2263)**
by @andiwand,  reviewed by @paulgessinger, updated on 2023-07-04
- ▶  **refactor: Add Concept for TrackStateProxy (#2261)**
by @paulgessinger,  reviewed by @andiwand, updated on 2023-07-04
- ▶  **ci: Add track momenta to physmon (#2221)**
by @felix-russo,  comment by @felix-russo, updated on 2023-07-03
- ▶  **refactor: Adding time to HelicalTrackLinearizer (#2179)**
by @felix-russo,  reviewed by @pbutti, updated on 2023-07-03
- ▶  **refactor: revisit FullBilloirVertexFitter (#2196)**
by @felix-russo,  **no reviewer**, updated on 2023-07-03
- ▶  **feat: Space point implementation (#1900)**
by @CarloVarni,  comment by @CarloVarni, updated on 2023-07-03
- ▶  **build: Geant4 CMakeList fix (#2252)**
by @H4m5t3r,  reviewed by @paulgessinger, updated on 2023-06-30
- ▶  **feat: actsvg plugin for new detector infrastructure (cylindrical) (#2228)**
by @asalzburger,  reviewed by @andiwand, updated on 2023-06-30























acts-project/acts: Open PRs III

- ▶  **refactor: Consistent naming of measurment_id and writer-reader-roundtrip (#2103)**
by @benjaminhuth,  reviewed by @andiwand, updated on 2023-06-30
- ▶  **feat: Seed Vertex Finder (#2038)**
by @pbalek,  comment by @pbalek, updated on 2023-06-29
- ▶  **refactor: Indexed surfaces generator (#2234)**
by @dimitra97,  comment by @dimitra97, updated on 2023-06-27
- ▶  **perf: Add option of stereo angle when building telescope detector (#2240)**
by @XiaocongAi,  comment by @paulgessinger, updated on 2023-06-23
- ▶  **refactor: change the definition of the rotation parameters (#2021)**
by @XiaocongAi, review requested, updated on 2023-06-23
- ▶  **perf: write unbiased residual for each track state (#2238)**
by @XiaocongAi,  reviewed by @AJPfleger, updated on 2023-06-23
- ▶  **feat: Addition of CsvSeedWriter (#2003)**
by @piotrmoszkowicz,  comment by @niermann999, updated on 2023-06-20
- ▶   **feat: ITk fast tracking configuration for Seeding (#2166)**
by @LuisFelipeCoelho,  comment by @CarloVarni, updated on 2023-07-04























acts-project/acts: Open PRs IV









- ▶   **ci: Monitor memory in physmon jobs (#2268)**
by @paulgessinger,  **no reviewer**, updated on 2023-07-04
- ▶   **refactor: use grid density seeding (#2270)**
by @felix-russo,  **no reviewer**, updated on 2023-07-04
- ▶   **fix: Remove unit C (#2142)**
by @andiwand,  **no reviewer**, updated on 2023-07-04
- ▶   **refactor: 'direction' and 'qOverP' for Fatras particle interface (#2251)**
by @andiwand,  comment by @andiwand, updated on 2023-07-04
- ▶   **refactor: Explicit and type safe navigation delegates (#2214)**
by @andiwand,  comment by @paulgessinger, updated on 2023-07-04
- ▶   **perf: Reduce memory consumption of track finding (#2206)**
by @paulgessinger,  comment by @paulgessinger, updated on 2023-07-04
- ▶   **feat: Introduce particle hypothesis (#2254)**
by @andiwand,  **no reviewer**, updated on 2023-07-04





acts-project/acts: Open PRs ▼

- ▶   **ci: Physmon for event simulation (#2232)**
by @andiwand,  reviewed by @paulgessinger, updated on 2023-07-04
- ▶   **feat: Stepper interface gains momentum (#2258)**
by @andiwand,  **no reviewer**, updated on 2023-07-03
- ▶   **ci: Physmon for single particles (#2159)**
by @andiwand,  **no reviewer**, updated on 2023-07-03
- ▶   **feat: FTF seeding (#2227)**
by @Rosie-Hasan,  comment by @timadye, updated on 2023-06-30
- ▶    **feat: dd4hep building with unit tests (#2161)**
by @asalzburger,  **no reviewer**, updated on 2023-06-29
- ▶   **refactor!: Particle hypothesis for track parameters (#2181)**
by @andiwand,  comment by @andiwand, updated on 2023-06-29
- ▶   **ci: Check and fix missing includes (#2248)**
by @benjaminhuth,  comment by @benjaminhuth, updated on 2023-06-28














acts-project/acts: Open PRs VI

- ▶   **feat: first test of cylindrical grid geometry (#2176)**
by @asalzbürger,  comment by @niermann999, updated on 2023-06-26
- ▶    **feat!: new cubic volume building (#1821)**
by @asalzbürger,  **no reviewer**, updated on 2023-06-23
- ▶   **feat: Multilayer structure builder (#2180)**
by @dimitra97,  comment by @dimitra97, updated on 2023-06-16
- ▶   **feat: Seed selector (#2195)**
by @CarloVarni,  comment by @CarloVarni, updated on 2023-06-15
- ▶   **fix: add protection of the matrix inverse calculations to avoid FPE (#2122)**
by @hrzhao76,  comment by @andiwand, updated on 2023-06-13
- ▶   **feat: Add PODIO plugin, Track EDM backend (#2094)**
by @paulgessinger,  **no reviewer**, updated on 2023-06-12
- ▶   **refactor!: compile-time DetectorMeasurementInfo for SSS (#2108)**
by @LuisFelipeCoelho,  comment by @paulgessinger, updated on 2023-06-11










- ▶   **WIP**  **Stale** **refactor: remove direction from constrained step (#2073)**
by @andiwand,  comment by @andiwand, updated on 2023-06-10
- ▶   **WIP**  **Stale** **refactor: add geohook for fast digitization range selection to itk example (#2089)**
by @niermann999,  **no reviewer**, updated on 2023-06-04

- ▶   **WIP**  **Stale** **feat: dd4hep building with unit tests (#2161)**
by @asalzbürger,  **no reviewer**, updated on 2023-06-29









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

- ▶   **WIP** Stale **feat: dd4hep building with unit tests (#2161)**
by @asalzbürger,  **no reviewer**, updated on 2023-06-29
- ▶  Stale **LCG compatibility (#2054)**
by @paulgessinger, updated on 2023-06-24
- ▶  Stale **TrackAtVertex trackWeight is not being written in IVF (#2149)**
by @andiwand, updated on 2023-06-23
- ▶   **WIP** Stale **feat!: new cubic volume building (#1821)**
by @asalzbürger,  **no reviewer**, updated on 2023-06-23
- ▶  Stale **Track nDoF only returns the sum of calibrated size and not the actual DoFs. (#2076)**
by @pbutti, updated on 2023-06-22
- ▶  Stale **Proposal: MultiWire SurfaceCandidateUpdater (#2063)**
by @asalzbürger, updated on 2023-06-21
- ▶   **WIP** Stale **refactor: remove direction from constrained step (#2073)**
by @andiwand,  **no reviewer**, updated on 2023-06-10









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

- ▶   **WIP** Stale refactor: add geohook for fast digitization range selection to itk example (#2089)
by @niermann999,  **no reviewer**, updated on 2023-06-04
- ▶  Stale Track parameter estimation algorithm return parameter on the first seed SP surface (#2037)
by @Corentin-Allaire, updated on 2023-05-25
- ▶  Stale Feature: Measurement removal to get unbiased residual during smoothing (#2031)
by @XiaocongAi, updated on 2023-05-20
- ▶  Stale Expose individual steps of track reconstruction in full_chain python scripts (#1997)
by @tboldagh, updated on 2023-05-20
- ▶  Stale Improvements to Track EDM (#1993)
by @paulgessinger, updated on 2023-05-20
- ▶  Stale Bad physmon results if interactions enabled in Fatras (#1643)
by @benjaminhuth, updated on 2023-05-09
- ▶  Stale Different results for full_chain_itk when running locally vs lxplus (#1819)
by @CarloVarni, updated on 2023-05-09









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

- ▶  **Stale Bug: Probable Issues in Bevelled Cylinder Implementation (#1238)**
by @rahmans1, updated on 2023-05-09
- ▶  **Stale Cmake error if ACTS_BUILD_PLUGIN_ACTSVG=ON (#1818)**
by @DraTeots, 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
- ▶  **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 error while i running full_chain_odd.py (#1661)**
by @rubihason, updated on 2023-05-09
- ▶  **Stale Bug: Unpredicable navigation in layer with overlapping surface (#1852)**
by @Corentin-Allaire, updated on 2023-03-25









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

- ▶  **Stale Make central minimum track momentum threshold (#1761)**
by @paulgessinger, updated on 2023-01-21
- ▶  **Stale Drop 'boost progress' from examples where it is not used (#1736)**
by @tboldagh, updated on 2023-01-16
- ▶  **Stale Remove 'volumeSignature' from geometry building (#1731)**
by @paulgessinger, updated on 2023-01-16
- ▶  **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 Create volume restricted BFieldMap (#1659)**
by @asalzbuerger, updated on 2022-12-21
- ▶  **Stale Documentation update: Core (#1418)**
by @paulgessinger, updated on 2022-11-23
- ▶  **Stale Documentation update: Examples (#1420)**
by @paulgessinger, updated on 2022-11-23

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

- ▶  **Stale Documentation update: How-to (core) (#1422)**
by @paulgessinger, updated on 2022-11-23
- ▶  **Stale Documentation update: Plugins (#1421)**
by @paulgessinger, updated on 2022-10-22
- ▶  **Stale Documentation update: FATRAS (#1419)**
by @paulgessinger, updated on 2022-10-22
- ▶  **Stale Vertexing produces vertex candidates that are unreasonable (#1361)**
by @paulgessinger, updated on 2022-10-22
- ▶  **Stale Add Primary Vertex Label to tracks (#1544)**
by @Lucas-Borgna, updated on 2022-10-22
- ▶  **Stale Documentation update: Contribution guidelines (#1423)**
by @paulgessinger, updated on 2022-10-19
- ▶  **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










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- ▶  **Stale Documentation: hints for debugging (#1463)**
by @timadye, updated on 2022-09-24
- ▶  **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 Vertexing produces propagation errors (#1345)**
by @paulgessinger, updated on 2022-09-20
- ▶  **Stale add monitoring for vertexing in physmon (#1313)**
by @andiwand, updated on 2022-09-20
- ▶  **Stale 2D r-z Magnetic Field Map Improperly Read (#669)**
by @osbornjd, 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

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

- ▶ **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** **Reproducibility test using hash checks for non-linear KF (#1246)**
by @paulgessinger, updated on 2022-06-12
- ▶ **Stale** **Cut tube segment dd4hep conversion tests (#1146)**
by @rahmans1, updated on 2022-05-25
- ▶ **Stale** **Bug: fatras different particle final states between python and executable (#1221)**
by @CouthuresJeremy, updated on 2022-05-01
- ▶ **Stale** **ci: Coverage job is broken with gcovr \geq 5.1 (#1211)**
by @paulgessinger, updated on 2022-04-29
- ▶ **Stale** **Bug: issue on first build after DD4hep update on system with globally installed acts (#1139)**
by @gagnonlg, updated on 2022-02-22
- ▶ **Stale** **Feat: Radial bounds in DD4hep plugin (#822)**
by @whit2333, updated on 2022-02-19

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

- ▶  **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 [bug] Off axis endcap with dd4hep plugin. (#942)**
by @whit2333, updated on 2021-11-25
- ▶  **Stale Improvement: Estimate track parameters from seed at perigee surface (#1036)**
by @XiaocongAi, updated on 2021-11-10
- ▶  **Stale Polyhedron surfaces tests are disabled (#454)**
by @msmk0, updated on 2021-11-04
- ▶  **Stale Tracking for TPC/DC without surfaces (#165)**
by @FabianKlimpel, updated on 2021-11-04
- ▶  **Stale BoundingBox tests fail on double precision (#752)**
by @paulgessinger, updated on 2021-11-04
- ▶  **Stale Debug Information in Acts Seeder (#944)**
by @osbornjd, updated on 2021-10-21
- ▶  **Stale fix: avoid double-static cast (#647)**
by @asalzburger, updated on 2021-10-21