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November 14, 2023

















acts-project/acts: PRs merged between 2023-11-07 and 2023-11-14 |

- ▶  **docs: Restructure and update the documentation - 2023 edition** (#2610)
by @paulgessinger,  reviewed by @AJPfleger, merged on 2023-11-07
- ▶  **docs: fix path for white paper screen shots** (#2641)
by @felix-russo,  reviewed by @paulgessinger, merged on 2023-11-07
- ▶  **feat: Introduce propagator stage** (#2621)
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-11-07
- ▶  **fix: check_format(_local) for selected directories** (#2634)
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-11-07
- ▶  **docs: add white paper for AdaptiveGridTrackDensityTests** (#2639)
by @felix-russo,  reviewed by @AJPfleger, merged on 2023-11-08
- ▶  **ci: Update physmon vertexing histogram ranges** (#2638)
by @felix-russo,  reviewed by @paulgessinger, merged on 2023-11-08
- ▶  **docs: language and markdown brush-over** (#2642)
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-11-09
- ▶  **feat: allow custom precision for volume grid building** (#2609)
by @asalzburger,  reviewed by @niermann999, merged on 2023-11-09

















acts-project/acts: PRs merged between 2023-11-07 and 2023-11-14 II

- ▶  **refactor: use 'BOOST_<level>_EQUAL' and similar (#2632)**
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-11-09
- ▶  **refactor: unit test amvfitter (#2530)**
by @felix-russo,  reviewed by @AJPfleger, merged on 2023-11-10
- ▶  **docs: Add white paper on the correction term in transport jacobian (#2643)**
by @beomki-yeo,  reviewed by @paulgessinger, merged on 2023-11-10
- ▶  **feat: GX2F: abort condition 'relChi2changeCutOff' (#2586)**
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-11-10
- ▶  **refactor!: Introduce regular surface intermediate class (#2340)**
by @paulgessinger,  reviewed by @andiwand, merged on 2023-11-11
- ▶  **fix: and refactor geometric digitization (#2630)**
by @benjaminhuth,  reviewed by @asalzburger, merged on 2023-11-13
- ▶  **refactor: Refactor 'RootTrackStatesWriter' (#2648)**
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-11-13
- ▶  **refactor!: Consistent naming of GSF mixture reduction and component merging (#2658)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-11-14

















- ▶  **fix: GSF early stopping now should really stop (#2660)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-11-14
- ▶  **fix: Duplicated comment in reconstruction.py (#2651)**
by @LuisFelipeCoelho,  reviewed by @asalzburger, merged on 2023-11-14
- ▶  **feat: introduce typelist (#2656)**
by @asalzburger,  reviewed by @niermann999, merged on 2023-11-14

- ▶  **refactor: error handling in the vertexing algorithms (#2649)**
by @felix-russo,  comment by @felix-russo, updated on 2023-11-14
- ▶  **feat: Update Json converters and enhance Detray version writing (#2608)**
by @asalzburger,  comment by @niermann999, updated on 2023-11-14
- ▶  **feat: Add weight cut reduction to GSF (#2659)**
by @benjaminhuth,  comment by @benjaminhuth, updated on 2023-11-14
- ▶  **feat: Add GSF component momentum cut to stabilize fit (#2661)**
by @benjaminhuth,  comment by @benjaminhuth, updated on 2023-11-14
- ▶  **docs: Tweak admonition style, ensure eq. are ref'able (#2636)**
by @paulgessinger,  reviewed by @AJPfleger, updated on 2023-11-14
- ▶  **refactor: messages: fix missing and wrong closing ticks "" (#2663)**
by @AJPfleger,  **no reviewer**, updated on 2023-11-14
- ▶  **refactor: Make seeding config more understandable (#2652)**
by @LuisFelipeCoelho,  comment by @LuisFelipeCoelho, updated on 2023-11-14
- ▶  **feat: ML seed selection (#2576)**
by @Corentin-Allaire,  comment by @Corentin-Allaire, updated on 2023-11-14


















acts-project/acts: Open PRs II

- ▶  **refactor: use time info in Kalman vertex fit (#2544)**
by @felix-russo,  comment by @AJPfleger, updated on 2023-11-14
- ▶  **fix!: Fix helixCut tolerance parameter (#2653)**
by @LuisFelipeCoelho,  comment by @paulgessinger, updated on 2023-11-14
- ▶  **fix: newVertex not considered in AdaptiveMultiVertexFit (#2655)**
by @felix-russo,  reviewed by @paulgessinger, updated on 2023-11-14
- ▶  **refactor: remove dead code, default switch-cases (#2623)**
by @AJPfleger,  reviewed by @asalzburger, updated on 2023-11-14
- ▶  **feat: write_float to SeedingPerformanceWriter.cpp (#2654)**
by @LuisFelipeCoelho,  comment by @felix-russo, updated on 2023-11-14
- ▶  **docs: Add a white paper for line surface jacobian (#2657)**
by @beomki-yeo,  comment by @beomki-yeo, updated on 2023-11-14
- ▶  **refactor: Replace cuboid bounds with trapezoid bounds for multiwire builder (#2647)**
by @dimitra97,  comment by @paulgessinger, updated on 2023-11-13
- ▶  **feat: experiment cuts to doublets in seed finder (#2326)**
by @LuisFelipeCoelho,  comment by @LuisFelipeCoelho, updated on 2023-11-13





















acts-project/acts: Open PRs III




















- ▶  **feat: Introduce concepts for (Regular)Surface (#2646)**
by @paulgessinger,  **no reviewer**, updated on 2023-11-12
- ▶  **refactor: GX2F: add additional parameters to python bindings (#2584)**
by @AJPfleger,  **no reviewer**, updated on 2023-11-10
- ▶  **refactor: change the definition of the rotation parameters (#2021)**
by @XiaocongAi,  comment by @XiaocongAi, updated on 2023-11-10
- ▶  **feat: Add possibility to rotate the trapezoid bounds (#2583)**
by @junggjo9,  comment by @paulgessinger, updated on 2023-11-09
- ▶  **feat!: volume agnostic material mapping (#2473)**
by @asalzburger,  changes requested by @AJPfleger, updated on 2023-11-09
- ▶  **feat: allow rectangular shaped support surfaces (#2310)**
by @asalzburger,  comment by @asalzburger, updated on 2023-11-09
- ▶  **refactor!: Unify floating point type for chi2 in Track(State) (#2562)**
by @paulgessinger,  changes requested by @andiwand, updated on 2023-11-09
- ▶  **refactor: Release step constraint after stepper in propagation (#2596)**
by @andiwand,  **no reviewer**, updated on 2023-11-08

acts-project/acts: Open PRs IV
















- ▶  **refactor!: Fitted params to fitted momenta (#2402)**
by @felix-russo,  **no reviewer**, updated on 2023-11-08
- ▶  **chore: update to newer podio versions (#2606)**
by @asalzburger,  reviewed by @paulgessinger, updated on 2023-11-08
- ▶  **feat: Add DD4hep field adapter (#2593)**
by @paulgessinger,  **no reviewer**, updated on 2023-11-08
- ▶  **refactor: Refactor 'SurfaceReached' aborter (#2603)**
by @andiwand,  comment by @andiwand, updated on 2023-11-08
- ▶   **fix: Continue if number of top SPs is smaller than minimum required for filter in Orthogonal seeding (#2664)**
by @LuisFelipeCoelho,  **no reviewer**, updated on 2023-11-14
- ▶   **feat: Use seeding performance in score for Optuna and Orion automatic tuning (#2662)**
by @LuisFelipeCoelho,  **no reviewer**, updated on 2023-11-14
- ▶   **refactor: Move common test helpers to core (#2645)**
by @tboldagh,  comment by @tboldagh, updated on 2023-11-14








acts-project/acts: Open PRs ▼









- ▶   **refactor: Rewrite navigation (#2625)**
by @andiwand,  comment by @andiwand, updated on 2023-11-14
- ▶   **refactor!: Surface returns transform by value (#2527)**
by @asalzbürger,  **no reviewer**, updated on 2023-11-13
- ▶   **refactor: Move actor state into propagator state (#2552)**
by @andiwand,  comment by @paulgessinger, updated on 2023-11-13
- ▶   **feat!: Space point implementation (#1900)**
by @CarloVarni,  comment by @paulgessinger, updated on 2023-11-13
- ▶   **refactor: check that tracks are defined wrt origin before vertex seeding (#2637)**
by @felix-russo,  comment by @paulgessinger, updated on 2023-11-10
- ▶   **feat: cubic Detector infrastructure (#2308)**
by @asalzbürger,  **no reviewer**, updated on 2023-11-08
- ▶   **feat: update ODD version (#2399)**
by @asalzbürger, review requested, updated on 2023-11-08

- ▶   **fix: Correct the Sign of Drift Distance (#2538)**
by @beomki-yeo,  comment by @paulgessinger, updated on 2023-11-08
- ▶   **refactor: employ useConstraintInFit from VertexingOptions in AMVFitter (#2529)**
by @felix-russo,  changes requested by @andiwand, updated on 2023-11-08
- ▶   **feat: Adding grouping mechanism and delta calculations (#2520)**
by @LaraCalic,  comment by @paulgessinger, updated on 2023-11-08
- ▶   **feat: Random transformations of aligned sensors (#2519)**
by @LaraCalic,  comment by @paulgessinger, updated on 2023-11-08
- ▶   **feat: first test of cylindrical grid geometry (#2176)**
by @asalzburger,  comment by @niermann999, updated on 2023-11-08
- ▶    **refactor: add geohook for fast digitization range selection to itk example (#2089)**
by @niermann999,  **no reviewer**, updated on 2023-11-08









acts-project/acts: Open PRs VII

- ▶   **feat!: new cubic volume building (#1821)**
by @asalzbunger,  **no reviewer**, updated on 2023-11-08
- ▶   **feat: Add high-stats fuzzy random navigation test (#2601)**
by @paulgessinger,  **no reviewer**, updated on 2023-11-08
- ▶   **try: CKF with fuzzy navigation (#2588)**
by @andiwand,  **no reviewer**, updated on 2023-11-08
- ▶   **refactor: Physmon in pytest (#2575)**
by @paulgessinger,  comment by @paulgessinger, updated on 2023-11-08
- ▶   **feat: Proposal for required config parameters in Examples (#2559)**
by @andiwand,  **no reviewer**, updated on 2023-11-08









- ▶  **Stale Bug: Fatras sets step size to 0 (#2543)**
by @andiwand, updated on 2023-11-12
- ▶  **Stale [Feature Request] Reference surface for tracking algorithm is hardcoded to be at origin (#2525)**
by @janheinri, updated on 2023-11-09
- ▶  **Stale [Feature Request] Padding utility for field map in case tracking volume is larger than a given field map (#2523)**
by @janheinri, updated on 2023-11-09
- ▶  **Stale Propagator step count limit reached and Step size adjustment exceeds maximum trials (#2469)**
by @CarloVarni, updated on 2023-11-11
- ▶  **Stale Track finding rework (#2320)**
by @paulgessinger, updated on 2023-11-11
- ▶  **Stale refactor: add geohook for fast digitization range selection to itk example (#2089)**
by @niermann999,  **no reviewer**, updated on 2023-11-08

- ▶  **Stale Bug: Fatras sets step size to 0 (#2543)**
by @andiwand, updated on 2023-11-12
- ▶  **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 [Feature Request] Padding utility for field map in case tracking volume is larger than a given field map (#2523)**
by @janheinri, updated on 2023-11-09
- ▶   **WIP Stale refactor: add geohook for fast digitization range selection to itk example (#2089)**
by @niermann999,  **no reviewer**, updated on 2023-11-08









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- ▶  **Stale [Bug] Fatras can't seem to handle energy loss for electrons on thin surfaces (#2498)**
by @janheinri, updated on 2023-11-01
- ▶  **Stale Incorrect material interaction in backward propagation ? (#2429)**
by @Corentin-Allaire, updated on 2023-10-06
- ▶  **Stale Bug: Negative variances from AMVF (#2231)**
by @felix-russo, updated on 2023-09-29
- ▶  **Stale Expand TrackingGeometry building from DD4hep with user given input (#2403)**
by @asalzbunger, updated on 2023-09-27
- ▶  **Stale error while i running full_chain_odd.py (#1661)**
by @rubihason, updated on 2023-09-23
- ▶  **Stale LCG compatibility (#2054)**
by @paulgessinger, updated on 2023-09-22
- ▶  **Stale Bug: AMVF 'deleteLastVertex' might be wrong (#2380)**
by @andiwand, updated on 2023-09-16
- ▶  **Stale Bug: not all tracks have fittedMomentum (#2364)**
by @felix-russo, updated on 2023-09-13









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

- ▶  **Stale FPE: Bethe-Heitler 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 Missing 'cmake_minimum_required' in 'ActsConfig.cmake.in' (#2216)**
by @andiwand, updated on 2023-09-01
- ▶  **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
- ▶  **Stale Bug: Covariance matrix needs to be blown up in ODD example (#2074)**
by @pbutti, updated on 2023-07-23









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

- ▶  **Stale MultiTrajectory buffer default constructible (#2154)**
by @tboldagh, updated on 2023-07-20
- ▶  **Stale Construct tracking geometry from python (#2173)**
by @andiwand, updated on 2023-07-20
- ▶  **Stale EstimateTrackParamsFromSeed does not use time of measurement (#2136)**
by @andiwand, updated on 2023-07-17
- ▶  **Stale TrackAtVertex trackWeight is not being written in IVF (#2149)**
by @andiwand, 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 @asalzburger, updated on 2023-06-21
- ▶  **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









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- ▶  **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 Different results for full_chain_itk when running locally vs lplusplus (#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 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









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- ▶  **Stale Estimate Track Parameters from Seeds use only one surface. What about strips? (#1895)**
by @CarloVarni, updated on 2023-05-09
- ▶  **Stale Bug: Unpredictable 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 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 @asalzburger, updated on 2022-12-21









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- ▶  **Stale Documentation update: Core (#1418)**
by @paulgessinger, updated on 2022-11-23
- ▶  **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
- ▶  **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 Optionally have the vertex finding recalculate perigee parameters relative to consistent reference (#1482)**
by @paulgessinger, updated on 2022-10-01










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

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

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

- ▶  **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