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acts-project/acts

October 31, 2023

















## acts-project/acts: PRs merged between 2023-10-24 and 2023-10-31 |

- ▶  **feat: Add measurement map selector with geometry selection (#2572)**  
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-24
- ▶  **feat: Allow particle selection with measurement count (#2570)**  
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-24
- ▶  **refactor: Rework physmon track fitting (#2549)**  
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-24
- ▶  **refactor: improve and clean-up GX2F unitTest (#2573)**  
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-10-24
- ▶  **feat: Wire tolerance to bound parameter factory (#2563)**  
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-25
- ▶  **refactor: Make Fatras 'Particle' and simulation surface aware (#2546)**  
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-25
- ▶  **fix: Fix boundaries navigation (#2534)**  
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-25
- ▶  **feat: Add (optional) Jacobian reversal to Track (#2571)**  
by @paulgessinger,  reviewed by @felix-russo, merged on 2023-10-25





## acts-project/acts: PRs merged between 2023-10-24 and 2023-10-31 II

















- ▶  **feat: use blueprint to generate cylindrical detector (#2557)**  
by @asalzburger,  reviewed by @niermann999, merged on 2023-10-25
- ▶  **feat: add boolean useTime to AMVFitter (#2521)**  
by @felix-russo,  reviewed by @paulgessinger, merged on 2023-10-25
- ▶  **refactor: comment and unify the creation and filling of trackStateProxy (KF) (#2499)**  
by @AJPfleger,  reviewed by @andiwand, merged on 2023-10-25
- ▶  **refactor!: remove division of vertex covariance with weight (#2551)**  
by @felix-russo,  reviewed by @paulgessinger, merged on 2023-10-25
- ▶  **fix: enforce calculation of impact parameters wrt vertex position (#2524)**  
by @felix-russo,  reviewed by @paulgessinger, merged on 2023-10-26
- ▶  **ci: Remove 'docker' tag, restrict ExaTrkX build to big VMs (#2579)**  
by @paulgessinger,  reviewed by @benjaminhuth, merged on 2023-10-26
- ▶  **refactor: Replace magic seeding field in Examples (#2577)**  
by @andiwand,  reviewed by @AJPfleger, merged on 2023-10-26
- ▶  **fix: GeoVisualization - Fix compiler warning that's appearing in Athena (#2585)**  
by @junggjo9,  reviewed by @paulgessinger, merged on 2023-10-26

## acts-project/acts: PRs merged between 2023-10-24 and 2023-10-31 III

















- ▶  **fix: Use track selection in GSF physmon (#2578)**  
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-27
- ▶  **fix: Fix Fatras end of world (#2580)**  
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-27
- ▶  **refactor: Improve CKF error message if target surface is not reached (#2587)**  
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-27
- ▶  **refactor: Refactor FPE masks in Examples (#2581)**  
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-28
- ▶  **refactor: Refactor Examples to use tracks instead of trajectories (#2560)**  
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-28
- ▶  **fix: CKF does an extra copy on the fitted state (#2568)**  
by @paulgessinger,  reviewed by @andiwand, merged on 2023-10-28
- ▶  **chore: Support macOS in setup script (ODD) (#2594)**  
by @paulgessinger,  reviewed by @AJPfleger, merged on 2023-10-30
- ▶  **feat: cylindrical detector from DD4hep (#2582)**  
by @asalzburger,  reviewed by @paulgessinger, merged on 2023-10-30

acts-project/acts: PRs merged between 2023-10-24 and 2023-10-31 IV

















- ▶  **fix: Protection against nullptr in material interactor of KF (#2597)**  
by @CarloVarni,  reviewed by @andiwand, merged on 2023-10-30
- ▶  **ci: Add clang-tidy check for &&, || and ! instead of and, or and not (#2569)**  
by @paulgessinger,  reviewed by @andiwand, merged on 2023-10-31

- ▶  **fix: 'safelInverse(m)' for matrices larger than 4x4 (#2602)**  
by @AJPfleger,  comment by @AJPfleger, updated on 2023-10-31
- ▶  **refactor: use time info in Kalman vertex fit (#2544)**  
by @felix-russo,  comment by @felix-russo, updated on 2023-10-31
- ▶  **refactor: Release step constraint after stepper in propagation (#2596)**  
by @andiwand,  **no reviewer**, updated on 2023-10-31
- ▶  **fix: Set Current Surface as first surface for direct navigator (#2600)**  
by @CarloVarni,  reviewed by @andiwand, updated on 2023-10-31
- ▶  **refactor: Intersection index for stepper surface update (#2599)**  
by @andiwand,  **no reviewer**, updated on 2023-10-31
- ▶  **refactor: Remove target estimation from navigator (#2598)**  
by @andiwand,  **no reviewer**, updated on 2023-10-31
- ▶  **feat: experiment cuts to dublets in seed finder (#2326)**  
by @LuisFelipeCoelho,  comment by @CarloVarni, updated on 2023-10-30
- ▶  **feat: ML seed selection (#2576)**  
by @Corentin-Allaire,  comment by @Corentin-Allaire, updated on 2023-10-30

## acts-project/acts: Open PRs II





















- ▶  **feat: Add DD4hep field adapter (#2593)**  
by @paulgessinger,  **no reviewer**, updated on 2023-10-29
- ▶  **Stale** **feat: allow rectangular shaped support surfaces (#2310)**  
by @asalzburger,  comment by @asalzburger, updated on 2023-10-29
- ▶  **feat: GX2F: use magnetic field to fit q/p (#2574)**  
by @AJPfleger,  comment by @andiwand, updated on 2023-10-29
- ▶  **refactor!: Make 'BoundaryCheck' constructor from 'bool' explicit (#2592)**  
by @andiwand,  **no reviewer**, updated on 2023-10-28
- ▶  **feat: Add possibility to rotate the trapezoid bounds (#2583)**  
by @junggjo9,  **no reviewer**, updated on 2023-10-28
- ▶  **refactor!: Unify floating point type for chi2 in Track(State) (#2562)**  
by @paulgessinger,  changes requested by @andiwand, updated on 2023-10-27
- ▶  **refactor: GX2F: add additional parameters to python bindings (#2584)**  
by @AJPfleger,  **no reviewer**, updated on 2023-10-27
- ▶  **refactor!: Fitted params to fitted momenta (#2402)**  
by @felix-russo,  **no reviewer**, updated on 2023-10-25

## acts-project/acts: Open PRs III






















- ▶  **refactor!: Introduce regular surface intermediate class (#2340)**  
by @paulgessinger,  reviewed by @andiwand, updated on 2023-10-25
- ▶  **refactor: unit test amvfitter (#2530)**  
by @felix-russo,  **no reviewer**, updated on 2023-10-24
- ▶  **refactor!: move AMVF and IVF config explicitly (#2509)**  
by @felix-russo,  **no reviewer**, updated on 2023-10-23
- ▶  **feat!: volume agnostic material mapping (#2473)**  
by @asalzburger,  **no reviewer**, updated on 2023-10-03
- ▶  **refactor: change the definition of the rotation parameters (#2021)**  
by @XiaocongAi,  comment by @paulgessinger, updated on 2023-08-03
- ▶   **docs: Add collector for whitepapers (#2591)**  
by @paulgessinger,  **no reviewer**, updated on 2023-10-31
- ▶   **feat: Add high-stats fuzzy random navigation test (#2601)**  
by @paulgessinger,  **no reviewer**, updated on 2023-10-31

























## acts-project/acts: Open PRs IV


- ▶   **refactor: Remove path limit from navigation (#2595)**  
by @andiwand,  **no reviewer**, updated on 2023-10-31
- ▶   **Stale feat: cubic Detector infrastructure (#2308)**  
by @asalzbürger,  **no reviewer**, updated on 2023-10-29
- ▶   **Stale feat: update ODD version (#2399)**  
by @asalzbürger, review requested, updated on 2023-10-29
- ▶   **try: CKF with fuzzy navigation (#2588)**  
by @andiwand,  **no reviewer**, updated on 2023-10-28
- ▶   **fix: Correct the Sign of Drift Distance (#2538)**  
by @beomki-yeo,  comment by @paulgessinger, updated on 2023-10-27
- ▶   **feat: GX2F: abort condition 'relChi2changeCutOff' (#2586)**  
by @AJPflegger,  **no reviewer**, updated on 2023-10-26
- ▶   **feat: Random transformations of aligned sensors (#2519)**  
by @LaraCalic,  comment by @paulgessinger, updated on 2023-10-26












## acts-project/acts: Open PRs ▼

- ▶   **refactor: Move actor state into propagator state (#2552)**  
by @andiwand,  comment by @paulgessinger, updated on 2023-10-26
- ▶   **refactor: employ useConstraintInFit from VertexingOptions in AMVFitter (#2529)**  
by @felix-russo,  changes requested by @andiwand, updated on 2023-10-25
- ▶   **refactor: Physmon in pytest (#2575)**  
by @paulgessinger,  comment by @paulgessinger, updated on 2023-10-24
- ▶   **feat: Proposal for required config parameters in Examples (#2559)**  
by @andiwand,  **no reviewer**, updated on 2023-10-24
- ▶   **fix: Initial track param covariance inflation (#2295)**  
by @andiwand,  comment by @andiwand, updated on 2023-10-24
- ▶   **feat: GSF mixture mode (#2564)**  
by @benjaminhuth,  **no reviewer**, updated on 2023-10-24
- ▶   **refactor: Use step length in 'VolumeMaterialInteraction' (#2278)**  
by @andiwand,  comment by @andiwand, updated on 2023-10-22






















## acts-project/acts: Open PRs VI

- ▶   **feat: Adding grouping mechanism and delta calculations (#2520)**  
by @LaraCalic,  comment by @paulgessinger, updated on 2023-10-13
- ▶   **refactor!: Surface returns transform by value (#2527)**  
by @asalzburger,  **no reviewer**, updated on 2023-10-11
- ▶   **ci: Physmon for single particles (#2159)**  
by @andiwand,  **no reviewer**, updated on 2023-09-29
- ▶   **feat: first test of cylindrical grid geometry (#2176)**  
by @asalzburger,  comment by @niermann999, updated on 2023-09-29
- ▶    **refactor: add geohook for fast digitization range selection to itk example (#2089)**  
by @niermann999,  **no reviewer**, updated on 2023-09-29
- ▶   **feat!: Space point implementation (#1900)**  
by @CarloVarni,  comment by @paulgessinger, updated on 2023-09-29
- ▶   **feat!: new cubic volume building (#1821)**  
by @asalzburger,  **no reviewer**, updated on 2023-09-18









- ▶  **FPE: AMVF keepNewVertex (#2590)**  
by @andiwand, updated on 2023-10-27

- ▶   **WIP**  **Stale** **feat: update ODD version (#2399)**  
by @asalzburger,  **no reviewer**, updated on 2023-10-29
- ▶   **Stale** **feat: allow rectangular shaped support surfaces (#2310)**  
by @asalzburger,  **no reviewer**, updated on 2023-10-29
- ▶   **WIP**  **Stale** **feat: cubic Detector infrastructure (#2308)**  
by @asalzburger,  **no reviewer**, updated on 2023-10-29









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

- ▶   **WIP**  **Stale** **feat: cubic Detector infrastructure (#2308)**  
by @asalzbürger,  **no reviewer**, updated on 2023-10-29
- ▶   **Stale** **feat: allow rectangular shaped support surfaces (#2310)**  
by @asalzbürger,  **no reviewer**, updated on 2023-10-29
- ▶   **WIP**  **Stale** **feat: update ODD version (#2399)**  
by @asalzbürger,  **no reviewer**, updated on 2023-10-29
- ▶   **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
- ▶   **WIP**  **Stale** **refactor: add geohook for fast digitization range selection to itk example (#2089)**  
by @niermann999,  **no reviewer**, updated on 2023-09-29
- ▶   **Stale** **Expand TrackingGeometry building from DD4hep with user given input (#2403)**  
by @asalzbürger, updated on 2023-09-27

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

- ▶  **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
- ▶  **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

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









- ▶  **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
- ▶  **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











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

- ▶ **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
- ▶ **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 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









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

- ▶  **Stale Cmake error if ACTS\_BUILD\_PLUGIN\_ACTSVG=ON (#1818)**  
by @DraTeets, 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 Bug: Unpredicable 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









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

- ▶  **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
- ▶  **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









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








- ▶  **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
- ▶  **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

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

- ▶  **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
- ▶  **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

## acts-project/acts: All stale Issues / PRs IX

- ▶  **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
- ▶  **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