# Pull request and issue summary for acts-project/acts

December 12, 2023

## acts-project/acts: PRs merged between 2023-12-05 and 2023-12-12 | I

- ► chore: Remove 'volumeSignature' from geometry building (#2759) by @AJPfleger, reviewed by @asalzburger, merged on 2023-12-05
- ▶ feat: update to ATLAS-based FTF seeding (#2726) by @Rosie-Hasan, ✓ reviewed by @AJPfleger, merged on 2023-12-05
- ▶ **fix:** Document and fix IWYU (#2765) by @andiwand, ✓ reviewed by @AJPfleger, merged on 2023-12-05
- ► fix: Fix CKF pathlimit abort (#2744) by @andiwand, ✓ reviewed by @asalzburger, merged on 2023-12-05
- ► refactor: Make seeding config more understandable (#2652) by @LuisFelipeCoelho, reviewed by @paulgessinger, merged on 2023-12-06

## acts-project/acts: PRs merged between 2023-12-05 and 2023-12-12 II

- ► fix: Fix IWYU mapping file (#2772) by @andiwand, ✓ reviewed by @AJPfleger, merged on 2023-12-06
- ▶ chore: Add pre-commit config file (#2763) by @paulgessinger, reviewed by @asalzburger, merged on 2023-12-06
- ▶ refactor: Factorize GX2F delta param calculation (#2774) by @paulgessinger, reviewed by @AJPfleger, merged on 2023-12-06
- ▶ fix: GX2F: Finish material-less fit by resetting the track container (#2739) by @AJPfleger, reviewed by @paulgessinger, merged on 2023-12-07
- ▶ **feat:** add useTime to AMVFinder + python binding (#2721) by @felix-russo, ✓ reviewed by @andiwand, merged on 2023-12-07
- ▶ ci: check for unused files add python checks and Cl-dir (#2778) by @AJPfleger, ✓ reviewed by @andiwand, merged on 2023-12-07

#### acts-project/acts: PRs merged between 2023-12-05 and 2023-12-12 III

- ▶ lb refactor: Set defaults for 'GreedyAmbiguityResolution' (#2784) by @andiwand, ✓ reviewed by @AJPfleger, merged on 2023-12-11
- ▶ \$\infty\$ docs: Bump doxygen, small doc comment fixes (#2790) by @paulgessinger, ✓ reviewed by @andiwand, merged on 2023-12-11
- ► For refactor!: Refactor 'MaterialSlab' combination (#2783) by @andiwand, reviewed by @paulgessinger, merged on 2023-12-11
- ▶ lb refactor!: make trkGridSize non-template parameter in AdaptiveGridTrackDensity (#2745) by @felix-russo, reviewed by @paulgessinger, merged on 2023-12-12

## acts-project/acts: Open PRs I

- ▶ ↑ refactor!: set different initial spatial and temporal vertex variances (#2804) by @felix-russo, ✓ reviewed by @andiwand, updated on 2023-12-12
- ▶ \$\frac{1}{1}\$ feat: error parameterisation (and assignment) for geometric digitisation (#2815) by @asalzburger, \$\frac{1}{1}\$ no reviewer, updated on 2023-12-12
- ▶ ↑ refactor!: Remove 'CovarianceTransport' (#2781) by @andiwand, ✓ comment by @andiwand, updated on 2023-12-12
- ▶ \$\infty\$ feat: Dyn col copying btw. different backend (Track+TrackState) (#2712) by @paulgessinger, reviewed by @andiwand, updated on 2023-12-12
- ▶ \$\infty\$ feat: generic Grid iterator (#2718) by @CarloVarni, comment by @niermann999, updated on 2023-12-12
- ▶ ↑ refactor!: Split TrackStateProxy into own header, public (#2807) by @paulgessinger, ↑ no reviewer, updated on 2023-12-12
- ▶ \$\infty\$ refactor: Refactor navigation (#2768) by @andiwand, \$\square\$ comment by @andiwand, updated on 2023-12-12
- ▶ nefactor: Introduce 'CurvilinearSurface' (#2814) by @andiwand, no reviewer, updated on 2023-12-12

# acts-project/acts: Open PRs II

- ► ↑ refactor: Remove 'resetState' from navigator (#2808) by @andiwand, ★ changes requested by @paulgessinger, updated on 2023-12-12
- ▶ ↑ refactor!: Remove smoothing and extrapolation from CKF (#2722) by @andiwand, ✓ comment by @andiwand, updated on 2023-12-12
- ▶ Chore: bump Python version to 3.12 and update requirements (#2770) by @AJPfleger, reviewed by @paulgessinger, updated on 2023-12-12
- ▶ \$\infty\$ docs: Add a white paper for line surface jacobian (#2657) by @beomki-yeo, \$\square\$ comment by @paulgessinger, updated on 2023-12-12
- ▶ \$\tilde{\cappa}\$ refactor: Refactor 'Surface::boundToFreeJacobian' (#2811) by @andiwand, \( \bar{\cappa} \) no reviewer, updated on 2023-12-12
- ▶ ↑ refactor: Remove redundant default-constructor factory for Nav delegate (#2741) by @paulgessinger, ✓ reviewed by @asalzburger, updated on 2023-12-12
- ▶ **(\*) feat: ML based seed filtering** (#2709) by @Corentin-Allaire, **(\*) no reviewer**, updated on 2023-12-11

# acts-project/acts: Open PRs III

- ▶ ↑ refactor: Reuse 'JacobianEngine' (#2789) by @andiwand, ↑ no reviewer, updated on 2023-12-11
- ▶ \$\frac{1}{2}\$ docs: update vertexing documentation (#2802) by @felix-russo, no reviewer, updated on 2023-12-11
- ▶ \$\text{\text{\$\geq}}\$ refactor: Remove 'autodiff' (#2793) by @andiwand, \$\frac{\text{\$\geq}}{\text{\$\geq}}\$ no reviewer, updated on 2023-12-11
- ▶ \$\tilde{\cappa}\$ refactor: Use common direction transform Jacobian (#2782) by @andiwand, \$\vec{\sqrt{\cappa}}\$ reviewed by @AJPfleger, updated on 2023-12-11
- ▶ î fix: Initial track param covariance inflation (#2295) by @andiwand, ✓ reviewed by @felix-russo, updated on 2023-12-11
- ▶ \$\frac{1}{2}\$ feat: Add possibility to rotate the trapezoid bounds (#2583) by @junggjo9, \$\sqrt{2}\$ comment by @paulgessinger, updated on 2023-12-09
- ▶ \$\infty\$ feat: add helper and fusing infrastructure for cuboidal detectors (#2754) by @asalzburger, \$\times\$ changes requested by @AJPfleger, updated on 2023-12-08
- ▶ \$\infty\$ feat: writeFloat for seeding performance in SeedingPerformanceWriter.cpp (#2654) by @LuisFelipeCoelho, comment by @paulgessinger, updated on 2023-12-08

# acts-project/acts: Open PRs IV

- ▶ \$\infty\$ refactor: consider only tracks with non-zero weight in VertexPerfomanceWriter (#2775) by @felix-russo, comment by @felix-russo, updated on 2023-12-07
- ▶ ↑ refactor: correct phi and theta for periodicity changes in KalmanVertexUpdater (#2769) by @felix-russo, ✓ reviewed by @paulgessinger, updated on 2023-12-07
- ▶ \$\fix: \text{cross-covariance matrix in FullBilloirVertexFitter} (#2771) by @felix-russo, \$\sqrt{\text{comment by @felix-russo}}\$, updated on 2023-12-07
- ▶ \$\tilde{\cappa}\$ feat: Use seeding performance in score for Optuna and Orion automatic tuning (#2662) by @LuisFelipeCoelho, \$\square\$ comment by @felix-russo, updated on 2023-12-06
- ▶ \$\frac{1}{2}\$ chore!: Remove volumeSignature from geometry building (#2767) by @AJPfleger, \$\frac{1}{2}\$ no reviewer, updated on 2023-12-06
- ▶ \$\tilde{\cappa}\$ feat: allow to set proto material to portals of volumes and containers (#2752) by @asalzburger, \$\vec{\sqrt}\$ reviewed by @Corentin-Allaire, updated on 2023-12-06
- ▶ ↑ refactor!: Give CKF BranchStopper access to TrackState (#2757) by @paulgessinger, ↑ no reviewer, updated on 2023-11-30
- ▶ \$\frac{1}{2}\$ chore: Introduce macOS amr64 CI (#2755) by @paulgessinger, \( \bar{1} \) no reviewer, updated on 2023-11-30

# acts-project/acts: Open PRs V

- ▶ \$\tilde{\cappa}\$ refactor: Move actor state into propagator state (#2552) by @andiwand, \$\vec{\sqrt}\$ comment by @paulgessinger, updated on 2023-11-28
- ▶ ↑ refactor!: Remove implicit default layer from 'CuboidVolumeBuilder' (#2681) by @andiwand, ✓ comment by @andiwand, updated on 2023-11-24
- ▶ ↑ perf: Tile 8×8 covariance matrix multiplication (#1181) by @stephenswat, ✓ comment by @andiwand, updated on 2023-11-22
- ▶ ↑ refactor: Some internal GSF refactorings (#2697) by @benjaminhuth, ★ changes requested by @andiwand, updated on 2023-11-19
- ▶ \$\frac{1}{2}\$ feat!: volume agnostic material mapping (#2473) by @asalzburger, \$\times\$ changes requested by @AJPfleger, updated on 2023-11-17
- ▶ \$\tilde{\cappa}\$ refactor: change the definition of the rotation parameters (#2021) by @XiaocongAi, \$\square\$ comment by @XiaocongAi, updated on 2023-11-10
- ▶ \$\int \text{ feat: allow rectangular shaped support surfaces (#2310)} by @asalzburger, \$\square\$ comment by @asalzburger, updated on 2023-11-09
- ▶ ↑ WIP docs: Document Track EDM (#2797)
  by @paulgessinger, ★ changes requested by @andiwand, updated on 2023-12-12

# acts-project/acts: Open PRs VI

- ▶ ( WIP AlignmentGroup (#2706) by @gagnonlg, no reviewer, updated on 2023-12-11
- by @goetzgaycken, no reviewer, updated on 2023-12-11
- ▶ \$\forall \text{WIP} docs: GX2F: write documentation (#2803) by @AJPfleger, \( \hat{\chi} \) no reviewer, updated on 2023-12-11
- by @andiwand, no reviewer, updated on 2023-12-11
- ▶ ( WIP docs: Add documentation for 'ParticleHypothesis' (#2799) by @andiwand, no reviewer, updated on 2023-12-11
- by @asalzburger,review requested, updated on 2023-12-08
- ▶ \$\ \cdots \quad \text{WIP} \quad \text{Stale} \quad \text{fix: Correct the Sign of Drift Distance} (#2538) \quad \text{by @beomki-yeo, \ \nabla \quad \text{comment by @paulgessinger, updated on 2023-12-08} \quad \quad \text{comment by } \quad \quad \text{comment by } \quad \quad \text{comment by } \quad \text{commen

## acts-project/acts: Open PRs VII

- ► \$\times \text{WIP} \text{ Stale refactor: Physmon in pytest (#2575)} by @paulgessinger, \text{ comment by @paulgessinger, updated on 2023-12-08}
- ▶ 1 WIP Stale feat: Proposal for required config parameters in Examples (#2559) by @andiwand, ↑ no reviewer, updated on 2023-12-08
- ▶ \$\times \text{WIP} \text{ Stale feat: Random transformations of aligned sensors (#2519)} by @LaraCalic, \text{ comment by @paulgessinger, updated on 2023-12-08}
- by @paulgessinger, no reviewer, updated on 2023-12-07
- ▶ ↑ WIP refactor: make usage of vertex constraint more evident (#2529) by @felix-russo, ★ changes requested by @andiwand, updated on 2023-12-07

## acts-project/acts: Open PRs VIII

- ► ↑ WIP refactor!: remove variable useVertexCovForIPEstimation from AMVFinder config (#2715)
  by @felix-russo, ✓ comment by @felix-russo, updated on 2023-12-07
- by @asalzburger, no reviewer, updated on 2023-12-06
- by @asalzburger, no reviewer, updated on 2023-12-06
- ▶ \$\times \text{WIP} \text{ feat: adding new IndexedSurfaceMaterial (#2701)} by @asalzburger, \$\times \text{comment by @noemina, updated on 2023-12-05}\$
- ▶ ↑ WIP refactor!: Rewrite navigation (#2625) by @andiwand, ✓ comment by @andiwand, updated on 2023-12-01
- by @paulgessinger, no reviewer, updated on 2023-11-21

# acts-project/acts: Open PRs IX

- by @felix-russo, no reviewer, updated on 2023-11-20
- by @benjaminhuth, comment by @benjaminhuth, updated on 2023-11-18
- by @asalzburger, no reviewer, updated on 2023-11-17
- by @benjaminhuth, no reviewer, updated on 2023-11-16
- ▶ ↑ WIP refactor: Delete the examples binaries (#2685) by @paulgessinger, ↑ no reviewer, updated on 2023-11-16
- by @asalzburger, no reviewer, updated on 2023-11-13
- ▶ \$\infty WIP feat!: Space point implementation (#1900) by @CarloVarni, ✓ comment by @paulgessinger, updated on 2023-11-13

## acts-project/acts: Open PRs X

- by @asalzburger, no reviewer, updated on 2023-11-08

#### acts-project/acts: Issues opened since 2023-12-05 |

- ▶ **© EDM4hep parameter conversion should use jacobians directly** (#2813) by @paulgessinger, updated on 2023-12-12
- ▶ Redundancy of bound and curvilinear state (#2812) by @andiwand, updated on 2023-12-12
- 'Surface::boundToFreeJacobian' could also use 'FreeVector' parameters (#2810) by @andiwand, updated on 2023-12-11
- ▶ **Write GX2F documentation** (#2791) by @AJPfleger, updated on 2023-12-11
- ➤ Telescope detector cookbook (#2800) by @paulgessinger, updated on 2023-12-11
- bug: documentation always builds in '<source>' (#2798) by @AJPfleger, updated on 2023-12-11
- ▶ **Write fatras documentation** (#2796) by @andiwand, updated on 2023-12-11
- ▶ **Write about new ParticleHypothesis type and assumptions** (#2795) by @andiwand, updated on 2023-12-11

#### acts-project/acts: Issues opened since 2023-12-05 | I

- Write CKF documentation (#2794) by @paulgessinger, updated on 2023-12-11
- ▶ Remove autodiff documentation (#2792) by @andiwand, updated on 2023-12-11
- ▶ Write documentation on the Track EDM (#2788) by @paulgessinger, updated on 2023-12-11
- Describe how the legacy geometry used to work and how it differs from the layerless geometry (#2787)
  - by @paulgessinger, updated on 2023-12-11
- Describe replacements of TrackingGeometry, TrackingVolume etc and how the classes map to one another. (#2786)
  - by @paulgessinger, updated on 2023-12-11
- ▶ Add description of Blueprint tree and how it can be used to create layerless detector. (#2785) by @paulgessinger, updated on 2023-12-11
- pytest-check 2.2.0..2.2 breaks some CI checks (linux\_test\_examples) (#2777) by @AJPfleger, updated on 2023-12-07
- Set a diffrent value of eta range using odd (#2776)
   by @rubihason, updated on 2023-12-06

# acts-project/acts: New stale Issues / PRs since 2023-12-05 | |

- by @paulgessinger, no reviewer, updated on 2023-12-08
- ▶ 1 WIP Stale feat: Proposal for required config parameters in Examples (#2559) by @andiwand, ↑ no reviewer, updated on 2023-12-08
- by @beomki-yeo, no reviewer, updated on 2023-12-08
- ▶ \$\forall \quad \text{WIP} \quad \text{Stale} \text{ feat: Random transformations of aligned sensors (#2519)} by @LaraCalic, \( \hat{\Lambda} \) no reviewer, updated on 2023-12-08
- Stale Cmake error if ACTS\_BUILD\_PLUGIN\_ACTSVG=ON (#1818) by @DraTeots, updated on 2023-12-11
- Stale Remove 'volumeSignature' from geometry building (#1731) by @paulgessinger, updated on 2023-12-06

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

- ▶ **Stale Improvements to Track EDM** (#1993) by @paulgessinger, updated on 2023-12-11
- by @beomki-yeo, no reviewer, updated on 2023-12-08
- by @paulgessinger, no reviewer, updated on 2023-12-08
- ▶ 1 WIP Stale feat: Proposal for required config parameters in Examples (#2559) by @andiwand, ↑ no reviewer, updated on 2023-12-08
- by @LaraCalic, no reviewer, updated on 2023-12-08
- by @LaraCalic, no reviewer, updated on 2023-12-08

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

- ▶ 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

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

- 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 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 Expand TrackingGeometry building from DD4hep with user given input (#2403) by @asalzburger, updated on 2023-09-27
- Stale Bug: AMVF 'deleteLastVertex' might be wrong (#2380) by @andiwand, updated on 2023-09-16

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

- ▶ Stale Bug: not all tracks have fittedMomentum (#2364) by @felix-russo, updated on 2023-09-13
- 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 Move some Digitization code from FATRAS to Core? (#2230) by @benjaminhuth, updated on 2023-07-28

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

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

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

- 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 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 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

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

- Stale Drop 'boost progress' from examples where it is not used (#1736) by @tboldagh, updated on 2023-01-16
- ▶ **Optimal seeding parameters for a detector** (#1699) by @CouthuresJeremy, updated on 2023-01-05
- 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

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

- Stale Documentation update: How-to (core) (#1422) by @paulgessinger, updated on 2022-11-23
- ▶ 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 Optionally have the vertex finding recalculate perigee parameters relative to consistent reference (#1482)
  - by @paulgessinger, updated on 2022-10-01
- by @paulgessinger, updated on 2022-10-01
- Stale Documentation: hints for debugging (#1463) by @timadye, updated on 2022-09-24

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

- Stale Vertexing produces unexpectedly poor efficiency (#1362) by @paulgessinger, 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 X

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

- Stale Bug: issue on first build after DD4hep update on system with globaly 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 XI

- 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