

































Pull request and issue summary for acts-project/acts

October 24, 2023

















acts-project/acts: PRs merged between 2023-10-17 and 2023-10-24 |







- ▶  **refactor: remove division of vertex covariance with weight (#2522)**
by @felix-russo,  reviewed by @paulgessinger, merged on 2023-10-17
- ▶  **fix: Fix vertexing for physmon ckf tracking (#2547)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-17
- ▶  **refactor: revert "remove division of vertex covariance with weight" (#2548)**
by @felix-russo,  reviewed by @AJPfleger, merged on 2023-10-17
- ▶  **refactor: Refactor CKF error handling and introduce path limit (#2540)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-18
- ▶  **refactor: Const access for 'Acts::Result' (#2555)**
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-18
- ▶  **feat: Add option for double-matching in CKF performance writer (#2554)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-19
- ▶  **ci: Update Exa.TrkX images (#2515)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-19
- ▶  **feat: Add timing, device hint and mutex to ExaTrkX plugin (#2553)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-19

acts-project/acts: PRs merged between 2023-10-17 and 2023-10-24 II
















- ▶  **feat: Add csv prototrack writer (#2513)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-19
- ▶  **refactor: Refactor target direction logic in KF/CKF (#2539)**
by @andiwand,  reviewed by @Corentin-Allaire, merged on 2023-10-19
- ▶  **feat: Angles of incidence in neural calibrator (#2494)**
by @gagnonlg,  reviewed by @felix-russo, merged on 2023-10-19
- ▶  **refactor: remove 'effectiveProjector()' from 'collector()' in GX2F (#2556)**
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-10-19
- ▶  **feat: Add infrastructure for GNN+CKF (#2558)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-20
- ▶  **refactor: Refactor and fix 'accuracy' property in 'ConstrainedStep' (#2532)**
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-20
- ▶  **feat: introduce blueprint (#2550)**
by @asalzburger,  reviewed by @niermann999, merged on 2023-10-20
- ▶  **perf: Improve 'ConstrainedStep' footprint after #2532 (#2561)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-20

acts-project/acts: PRs merged between 2023-10-17 and 2023-10-24 III

















- ▶  **feat: Fill track in GX2F (#2511)**
by @AJPfleger,  reviewed by @paulgessinger, merged on 2023-10-20
- ▶  **refactor: Propagator deduce parameter type from stepper (#2413)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-20
- ▶  **feat: Initial version of ATLAS-based FTF seeding (#2227)**
by @Rosie-Hasan,  reviewed by @timadye, merged on 2023-10-21
- ▶  **fix: Fixes after 2227 (#2565)**
by @andiwand,  reviewed by @paulgessinger, merged on 2023-10-22
- ▶  **chore: Remove semicolon after function definition (#2566)**
by @andiwand,  reviewed by @benjaminhuth, merged on 2023-10-22
- ▶  **fix: fix bugs and improve docs for prototracks-to-parameters algorithm (#2567)**
by @benjaminhuth,  reviewed by @andiwand, merged on 2023-10-22
- ▶  **feat: python bindings and truth tracking example for GX2F (#2512)**
by @AJPfleger,  reviewed by @benjaminhuth, merged on 2023-10-23
- ▶  **feat: Add PODIO plugin, Track EDM backend (#2094)**
by @paulgessinger,  reviewed by @asalzburger, merged on 2023-10-23

- ▶  **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

















acts-project/acts: Open PRs |

- ▶  **feat: ML seed selection (#2576)**
by @Corentin-Allaire,  comment by @Corentin-Allaire, updated on 2023-10-24
- ▶  **feat: use magnetic field in GX2F to fit QoP (#2574)**
by @AJPfleger,  **no reviewer**, updated on 2023-10-24
- ▶  **feat: use blueprint to generate cylindrical detector (#2557)**
by @asalzburger,  reviewed by @niermann999, updated on 2023-10-24
- ▶  **feat: Add (optional) Jacobian reversal to Track (#2571)**
by @paulgessinger,  reviewed by @felix-russo, updated on 2023-10-24
- ▶  **refactor: Make Fatras 'Particle' and simulation surface aware (#2546)**
by @andiwand,  comment by @benjaminhuth, updated on 2023-10-24
- ▶  **ci: Add clang-tidy check for &&, || and ! instead of and, or and not (#2569)**
by @paulgessinger, review requested, updated on 2023-10-24
- ▶  **feat: Wire tolerance to bound parameter factory (#2563)**
by @andiwand,  reviewed by @paulgessinger, updated on 2023-10-24
- ▶  **fix: Fix boundaries navigation (#2534)**
by @andiwand,  changes requested by @paulgessinger, updated on 2023-10-24





















acts-project/acts: Open PRs II

- ▶  **fix: enforce calculation of impact parameters wrt vertex position (#2524)**
by @felix-russo,  reviewed by @paulgessinger, updated on 2023-10-24
- ▶  **refactor: improve and clean-up GX2F unitTest (#2573)**
by @AJPfleger,  reviewed by @paulgessinger, updated on 2023-10-24
- ▶  **refactor: unit test amvfitter (#2530)**
by @felix-russo,  **no reviewer**, updated on 2023-10-24
- ▶  **refactor: use time info in Kalman vertex fit (#2544)**
by @felix-russo,  changes requested by @andiwand, updated on 2023-10-24
- ▶  **feat: add boolean useTime to AMVFitter (#2521)**
by @felix-russo,  comment by @felix-russo, updated on 2023-10-24
- ▶  **fix: Unify floating point type for chi2 in Track(State) (#2562)**
by @paulgessinger,  reviewed by @andiwand, updated on 2023-10-24
- ▶  **refactor!: remove division of vertex covariance with weight (#2551)**
by @felix-russo,  reviewed by @andiwand, updated on 2023-10-23
- ▶  **fix: CKF does an extra copy on the fitted state (#2568)**
by @paulgessinger,  reviewed by @andiwand, updated on 2023-10-23






















acts-project/acts: Open PRs III

- ▶  **refactor!: move AMVF and IVF config explicitly (#2509)**
by @felix-russo,  **no reviewer**, updated on 2023-10-23
- ▶  **feat: experiment cuts to dublets in seed finder (#2326)**
by @LuisFelipeCoelho,  comment by @CarloVarni, updated on 2023-10-17
- ▶  **refactor: comment and unify the creation and filling of trackStateProxy (KF) (#2499)**
by @AJPfleger,  reviewed by @andiwand, updated on 2023-10-14
- ▶  **feat: Random transformations of aligned sensors (#2519)**
by @LaraCalic,  comment by @paulgessinger, updated on 2023-10-13
- ▶  **feat!: volume agnostic material mapping (#2473)**
by @asalzburger,  **no reviewer**, updated on 2023-10-03
- ▶  **feat: allow rectangular shaped support surfaces (#2310)**
by @asalzburger,  comment by @asalzburger, updated on 2023-09-29
- ▶  **refactor!: Fitted params to fitted momenta (#2402)**
by @felix-russo,  **no reviewer**, updated on 2023-09-28
- ▶  **refactor!: Introduce regular surface intermediate class (#2340)**
by @paulgessinger,  reviewed by @andiwand, updated on 2023-09-26




















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

- ▶  **refactor: change the definition of the rotation parameters (#2021)**
by @XiaocongAi,  comment by @paulgessinger, updated on 2023-08-03
- ▶   **refactor: Physmon in pytest (#2575)**
by @paulgessinger,  comment by @paulgessinger, updated on 2023-10-24
- ▶   **refactor: Refactor Examples to use tracks instead of trajectories (#2560)**
by @andiwand,  comment by @benjaminhuth, updated on 2023-10-24
- ▶   **fix: Initial track param covariance inflation (#2295)**
by @andiwand,  comment by @andiwand, updated on 2023-10-24
- ▶   **refactor: employ useConstraintInFit from VertexingOptions in AMVFinder (#2529)**
by @felix-russo,  reviewed by @andiwand, updated on 2023-10-24
- ▶   **feat: GSF mixture mode (#2564)**
by @benjaminhuth,  **no reviewer**, updated on 2023-10-24
- ▶   **fix: Correct the Sign of Drift Distance (#2538)**
by @beomki-yeo,  comment by @beomki-yeo, updated on 2023-10-23

acts-project/acts: Open PRs ▼














- ▶   **feat: Selective misalignment (#2367)**
by @LaraCalic,  comment by @paulgessinger, updated on 2023-10-23
- ▶   **refactor: Use step length in 'VolumeMaterialInteraction' (#2278)**
by @andiwand,  comment by @andiwand, updated on 2023-10-22
- ▶   **refactor: Move actor state into propagator state (#2552)**
by @andiwand,  comment by @paulgessinger, updated on 2023-10-20
- ▶   **feat: Proposal for required config parameters in Examples (#2559)**
by @andiwand,  **no reviewer**, updated on 2023-10-20
- ▶   **feat: Adding grouping mechanism and delta calculations (#2520)**
by @LaraCalic,  comment by @paulgessinger, updated on 2023-10-13
- ▶   **Stale WIP: feat: misalignment (#2291)**
by @LaraCalic,  comment by @paulgessinger, updated on 2023-10-12
- ▶   **refactor!: Surface returns transform by value (#2527)**
by @asalzburger,  **no reviewer**, updated on 2023-10-11

acts-project/acts: Open PRs VI

- ▶   **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: Kalmanfilter alignment (#2286)**
by @LaraCalic,  comment by @gagnonlg, updated on 2023-09-29
- ▶   **feat: cubic Detector infrastructure (#2308)**
by @asalzburger,  **no reviewer**, updated on 2023-09-29
- ▶   **feat!: Space point implementation (#1900)**
by @CarloVarni,  comment by @paulgessinger, updated on 2023-09-29

- ▶   **feat: update ODD version (#2399)**
by @asalzburger, review requested, updated on 2023-09-29
- ▶   **feat!: new cubic volume building (#1821)**
by @asalzburger,  **no reviewer**, updated on 2023-09-18
- ▶    **refactor: Explicit and type safe surface candidates delegates for new detector navigation (#2316)**
by @andiwand,  **no reviewer**, updated on 2023-08-23









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- ▶   **WIP**  **Stale** **WIP: feat: misalignment** (#2291)
by @LaraCalic,  **no reviewer**, updated on 2023-10-12
- ▶  **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 @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

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- ▶  **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
- ▶   **Stale refactor: Explicit and type safe surface candidates delegates for new detector navigation (#2316)**
by @andiwand,  **no reviewer**, updated on 2023-08-23









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- ▶  **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









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- ▶ **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
- ▶ **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 lxxplus** (#1819)
by @CarloVarni, updated on 2023-05-09
- ▶ **Stale** **Bug: Probable Issues in Bevelled Cylinder Implementation** (#1238)
by @rahmans1, updated on 2023-05-09









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- ▶  **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









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- ▶  **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









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- ▶  **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

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- ▶  **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