Pull request and issue summary for acts-project/acts

June 27, 2023

Needs discussion I

▶ ⊙ **Move some Digitization code from FATRAS to Core?** (#2230)
by @benjaminhuth

During discussion with @pbutti we thought if some of the digitization code from the 'FATRAS' package might better belong to 'Core'. More precisely, from the Classes and files in 'Fatras/Digitization' only the 'UncorrelatedHitSmearer.hpp' depends on 'ActsFatras::Hit'
All other files in that directory only depend on each other or on Core functionality, these are: "'
Channelizer.hpp ChannelMerger.hpp DigitizationData.hpp DigitizationError.hpp PlanarSurfaceDrift.hpp PlanarSurfaceMask.hpp "' as well as "' Channelizer.cpp DigitizationError.cpp PlanarSurfaceDrift.cpp PlanarSurfaceMask.cpp "'
So these don't depend on any of the FATRAS infrastructure.
Are there conceptual or design considerations for keeping this in FATRAS?

acts-project/acts: PRs merged between 2023-06-20 and 2023-06-27 I

- ▶ **fix: clang-format style and update docs** (#2207)
  by @AJPfleger, ✅ reviewed by @paulgessinger, merged on 2023-06-20

- ▶ **feat: add prototracks-to-seeds algorithm** (#2219)
  by @benjaminhuth, ✅ reviewed by @andiwand, merged on 2023-06-20

- ▶ **ci: Add codespell to CI** (#2218)
  by @benjaminhuth, ✅ reviewed by @andiwand, merged on 2023-06-20

- ▶ **refactor: Use inheritance to improve python Sequencer** (#2220)
  by @paulgessinger, ✅ reviewed by @andiwand, merged on 2023-06-20

- ▶ **feat: Enable resolved stack traces in clang** (#2223)
  by @paulgessinger, ✅ reviewed by @benjaminhuth, merged on 2023-06-20

- ▶ **docs: Ignore tavianator.com in linkcheck** (#2225)
  by @paulgessinger, ✅ reviewed by @andiwand, merged on 2023-06-21

- ▶ **chore: Align event generation in physics monitoring and ODD full chain** (#2222)
  by @andiwand, ✅ reviewed by @paulgessinger, merged on 2023-06-21

- ▶ **fix: and refactor Exa.TrkX plugin** (#2192)
  by @benjaminhuth, ✅ reviewed by @andiwand, merged on 2023-06-22

- ▶ ⌥ **feat: NeuralCalibrator: ML-based measurement calibration** (#2111)
  by @gagnonlg, ✅ reviewed by @Corentin-Allaire, merged on 2023-06-22

- ▶ ⌥ **feat: Improve Acts::zip to take arbitrary number of ranges** (#2236)
  by @benjaminhuth, ✅ reviewed by @paulgessinger, merged on 2023-06-23

- ▶ ⌥ **test: Unit test geometric digitization hit merging** (#2213)
  by @andiwand, ✅ reviewed by @paulgessinger, merged on 2023-06-23

- ▶ ⌥ **refactor: Using UnitConstants in calculation of minHelixRadius in SpacePointGrid** (#2243)
  by @LuisFelipeCoelho, ✅ reviewed by @beomki-yeo, merged on 2023-06-26

acts-project/acts: Open PRs I

- ▶ 🔀 **ci: Add Unit Test paths to auto-labeler** (#2242)
  by @paulgessinger, ✅ reviewed by @andiwand, updated on 2023-06-27

- ▶ 🔀 **fix: Prototracks to seeds spacepoint livetime** (#2244)
  by @benjaminhuth, ✅ reviewed by @andiwand, updated on 2023-06-27

- ▶ 🔀 **fix: missing include of array in FpeMonitor.hpp** (#2247)
  by @CarloVarni, ⚠️ **no reviewer**, updated on 2023-06-27

- ▶ 🔀 **refactor: Indexed surfaces generator** (#2234)
  by @dimitra97, ✅ comment by @dimitra97, updated on 2023-06-27

- ▶ 🔀 **feat: actsvg plugin for new detector infrastructure (cylindrical)** (#2228)
  by @asalzburger, ✅ comment by @asalzburger, updated on 2023-06-27

- ▶ 🔀 **refactor: Move 'ParticleData' from Fatras to Core** (#2233)
  by @andiwand, ✅ comment by @andiwand, updated on 2023-06-27

- ▶ 🔀 **ci: Add track momenta to physmon** (#2221)
  by @felix-russo, review requested, updated on 2023-06-26

- ▶ 🔀 **fix: Quick fix 'LineSurface' tolerance inconsistency in 'globalToLocal'** (#2239)
  by @andiwand, ⚠️ **no reviewer**, updated on 2023-06-26

acts-project/acts: Open PRs II

- ▶ 🔀 **refactor: Consistent naming of measurement_id and writer-reader-roundtrip** (#2103)
  by @benjaminhuth, ✅ reviewed by @andiwand, updated on 2023-06-26

- ▶ 🔀 **fix: Fix FPEOVF in 'RootParticleWriter'** (#2241)
  by @andiwand, ✅ reviewed by @paulgessinger, updated on 2023-06-23

- ▶ 🔀 **fix: Improve full chain pulls towards standard normal distribution** (#2086)
  by @andiwand, ✅ reviewed by @pbutti, updated on 2023-06-23

- ▶ 🔀 **ci: Physmon for event simulation** (#2232)
  by @andiwand, ✅ comment by @andiwand, updated on 2023-06-23

- ▶ 🔀 **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: draw measurements in e.g. '.obj', refactor and update unittests** (#2229)
  by @AJPfleger, ❌ changes requested by @asalzburger, updated on 2023-06-22

acts-project/acts: Open PRs III

- 🔀 **refactor: Testing HelicalTrackLinearizer by comparing its Jacobians to numerically computed derivatives** (#2141)
  by @felix-russo, ✅ comment by @felix-russo, updated on 2023-06-22

- 🔀 **feat: Seed Vertex Finder** (#2038)
  by @pbalek, ✅ comment by @pbalek, updated on 2023-06-21

- 🔀 **feat: Addition of CsvSeedWriter** (#2003)
  by @piotrmoszkowicz, ✅ comment by @niermann999, updated on 2023-06-20

- 🔀 🚧 WIP **refactor: review FullBilloirVertexFitter** (#2196)
  by @felix-russo, ⚠️ **no reviewer**, updated on 2023-06-26

- 🔀 🚧 WIP **feat: ITk fast tracking configuration for Seeding** (#2166)
  by @LuisFelipeCoelho, ✅ comment by @CarloVarni, updated on 2023-06-26

- 🔀 🚧 WIP **feat: first test of cylindrical grid geometry** (#2176)
  by @asalzburger, ✅ comment by @niermann999, updated on 2023-06-26

- 🔀 🚧 WIP **refactor: Adding time to HelicalTrackLinearizer** (#2179)
  by @felix-russo, ✅ reviewed by @pbutti, updated on 2023-06-26

acts-project/acts: Open PRs IV

- ⎇ 🚧 WIP Stale **feat!: new cubic volume building** (#1821)
  by @asalzburger, ⚠️ **no reviewer**, updated on 2023-06-23

- ⎇ 🚧 WIP **refactor: Explicit and type safe navigation delegates** (#2214)
  by @andiwand, ✅ comment by @paulgessinger, updated on 2023-06-23

- ⎇ 🚧 WIP **refactor!: Particle hypothesis for track parameters** (#2181)
  by @andiwand, ✅ comment by @andiwand, updated on 2023-06-23

- ⎇ 🚧 WIP **feat: FTF seeding** (#2227)
  by @Rosie-Hasan, ⚠️ **no reviewer**, updated on 2023-06-22

- ⎇ 🚧 WIP **ci: Physmon for single particles** (#2159)
  by @andiwand, ⚠️ **no reviewer**, updated on 2023-06-22

- ⎇ 🚧 WIP **fix: Remove unit C** (#2142)
  by @andiwand, ⚠️ **no reviewer**, updated on 2023-06-21

- ⎇ 🚧 WIP **feat: Multilayer structure builder** (#2180)
  by @dimitra97, ✅ comment by @dimitra97, updated on 2023-06-16

acts-project/acts: Open PRs V

- ▶ 🌿 `WIP` **feat: Space point implementation** (#1900)
  by @CarloVarni, ✅ comment by @CarloVarni, updated on 2023-06-15

- ▶ 🌿 `WIP` **feat: Seed selector** (#2195)
  by @CarloVarni, ✅ comment by @CarloVarni, updated on 2023-06-15

- ▶ 🌿 `WIP` **perf: Reduce memory consumption of track finding** (#2206)
  by @paulgessinger, ✅ comment by @paulgessinger, updated on 2023-06-14

- ▶ 🌿 `WIP` **fix: add protection of the matrix inverse calculations to avoid FPE** (#2122)
  by @hrzhao76, ✅ comment by @andiwand, updated on 2023-06-13

- ▶ 🌿 `WIP` **feat: Add PODIO plugin, Track EDM backend** (#2094)
  by @paulgessinger, ⚠️ **no reviewer**, updated on 2023-06-12

- ▶ 🌿 `WIP` **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 **feat: dd4hep building with unit tests** (#2161)
  by @asalzburger, ⚠ **no reviewer**, updated on 2023-05-30

- ⊙ **Bug: Incorrect track parameters covariance after Billoir vertex fit** (#2246)
  by @felix-russo, updated on 2023-06-26
- ⊙ **Bug: Several FPEs when colliding lead** (#2245)
  by @pbalek, updated on 2023-06-26
- ⊙ **Bug: Negative variances from AMVF** (#2231)
  by @felix-russo, updated on 2023-06-26
- ⊙ **Bug: Combinatorial Kalman filter fails during track finding** (#2226)
  by @felix-russo, updated on 2023-06-26
- ⊙ **Move some Digitization code from FATRAS to Core?** (#2230)
  by @benjaminhuth, updated on 2023-06-23

- ⊙ 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 SurfaceCandidateUpdator** (#2063)
  by @asalzburger, updated on 2023-06-21
- ⊙ Stale **LCG compatibility** (#2054)
  by @paulgessinger, updated on 2023-06-24
- ⋔ 🚧 WIP Stale **feat!: new cubic volume building** (#1821)
  by @asalzburger, ⚠ **no reviewer**, updated on 2023-06-23

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

- ⊙ `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 @asalzburger, ⚠ **no reviewer**, updated on 2023-06-23

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  by @pbutti, updated on 2023-06-22

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  by @andiwand, ⚠ **no reviewer**, 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

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

- ▶ ⊙ 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

- ▶ ⊙ 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

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- ▶ ⊙ 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: Unpredicatable 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 IV

- ▶ ⊙ 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 VI

- ▶ ⊙ 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 VII

- ▶ ⊙ 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 $>=$ 5.1** (#1211)
  by @paulgessinger, updated on 2022-04-29

- ▶ ⊙ 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

- ▶ ⊙ 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

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

- ▶ ⊙ 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