

Z-set release notes

9.1.4

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This document summarizes the principal enhancements and fixes with respect to the previous Z-set release (9.1.3).

1 Zebulon

- Improve contact detection for continuum contact (verify normal alignment for contact projections).
- Improvements in stabilization for continuum contact.
- Add clearance option for mortar surface to surface contact.
- Improvements in shell elements formulation + test database
- c3d8r element - implementation of the hourglass control
- New feature : distributions of material properties
- Upgrade to 5.4.1 version of MUMPS solver
- Various enhancements in CPCG solver (sequential and parallel)

2 Z-cracks

- Bug fixes for windows version concerning the propagation calculations (dummy propagation cycles).
- Regular hexa-based TORE elset creation around crack fronts.
- Increase propagation robustness for highly curved fronts.
- Z-cracks/Ansys enhancements to handle diverse input data structures (keywords, table definitions, loading conditions, local frames, etc).
- Correction of contact pressure terms in G-integral.
- Added visualization feature for Propagation laws.
- B-cracks application demo has been introduced in the Z-set tests database.

3 Z-post

- Rainflow algorithm bugfix : initialization
- Updated Z-post/Samcef interface (Samcef versions 17 and higher).

4 Z-mat

- Revisited auxiliary variables mechanism with possibility to introduce user auxiliary variables (i.e. damage indicator calculation during FE simulation)
- Added general framework for material modeling in finite strains (`gen_fefp` behavior)
- Precision fixes and new tests in the TESTS database for `by_point` law in anisothermal case.
- Fixes in handling of plane strain condition (used for shell elements)
- Z-mat/Samcef interface for Samcef releases v18, v19 and higher.

5 Z-master

- Enhanced version of Auto Input Reader (`air`) Interface : add interfaces for new objects, highlight defined object, suppress *void* in objects naming
- Fix visualization (IP, ctele) for shell elements

6 Miscellaneous

- Concatenate FORGE@ simulation results with remeshing (*.fg3 format) into Z8 format.
- Interfaces for Abaqus 2022 release for Linux and Windows.
- Up-to-date zset4python plugin code (python 3.7 and 3.8) in the commercial release.
- Improvements for Z-mat-NxT GUI integration (Zpreload feature).
- Corrections in the FG3 (FORGE@) reader procedure for multidomain case.
- Z-set/Paraview plugin compatible with Paraview (Linux-5.4.1, Windows-5.6.2).