

Structural Analysis Software

Version History

FEM48

Version 4.4

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VERSION 4.4

Also available as FEM49, thanks to Edwin Córdoba

FEM48 main library

- Fixed bug in OPENFEM command
- textual change for the NODES inpuline command

VERSION 4.3

Also available as FEM49, thanks to Edwin Córdoba

FEM48 main library

- added Cholesky matrix solver, thanks to Gjermund Skailand, this is written in assembly and is much faster and more memory efficient than the HP solver: use this as default solver!
- removed Gauss matrix solver (obsolete due to Cholesky solver)
- added grobs for spring supports
- improved nodal displacement loads handling:
NLD loads now overrule supports: no more need to unrestrain a degree of freedom before giving it a NLD
improved REAC output: even with NLD loads, each node with a reaction is now only mentioned once
- added UserRPL interface for FEM browser: FBROW

WIZRD module

- made the structure wizards more uniform, now all wizards use length per span/bay input
- added multiple (!) rectangular section wizard, for rectangles, T sections, I sections, etc

VERSION 4.2

Also available as FEM49, thanks to Edwin Córdoba

MOVLD generator

- newly available Moving Loads Generator
- define load system of an unlimited number of concentrated member loads and the interval + stepsize
- outputs the NDIS REAC MFOR minimums and maximums in the current directory
- when defined the user program MOVLD.USR is run after each step, so you can add your own postprocessing!
- available as separate library: MOVLD with number 1604

FEM48 main library

- added optional node & member numbering in SPLOT
- major change in internal file-management: more speed (thus file-format has changed!)
- added cache for input check: more speed
- improved code for input check routines
- added custom browser for OPENFEM: more speed
- added optional GAUSS solve, now you can solve bigger problems (though it is very slow compared to "standard" routine)
- added programmable STYPE command: recalls structure type string
- added confirmation for PGLD and PGRS in menus only
- removed inverse status display
- removed "shift" indicators when calculating
- moved STRV commands to the PRINT module
- rewritten YesNo routine, now reacts to YES/NO menulabels and ENTER/ON keys
- bugfix: now NLD input is not overwritten after calculation
- bugfix: now ticking clock is properly suspended for ERASEFEM command
- bugfix: now 0 -> FEM works ok
- XLIBS have changed from v4.1 -> please check your own UserRPL progs with FEM commands
- some minor changes

WIZRD module

- added Properties generator: Rectangle, Tee, Circle, Circular Ring, Numerical, SED48 Database (!)
- About SED48 Database link: Get the latest SED48 **version 1.2** database library at my website, WIZRD looks for properties { "A" "Iy" "E" } or { "A" "Iz" "E" }, routine for conversion mm N <-> m kN is built-in
- added Selfweight generator (!)
- added Pre/Post stressing cable generators
- now completely SysRPL like rest of modules

QUERY module

- keypoints of 2=<keyp=<131 now allowed (was 3=<keyp=<50)

General

- removed all unsupported entries, this to improve portability of code

VERSION 4.1 PRE-RELEASE

- made *all* commands programmable(!), so lib 1604 (see v4.0/3.3) will not be needed
- note: *all* commands (ready for programmable use) available from FEM menu (just try LS or RS toggle labels to see what I mean by *all* commands :)
- added some extra commands for easy programmable file management ->FEM, FEM-> store and recall current file ->SNAM, SNAM-> store and recall file name note: 0 ->FEM erases the current FEMpar file ! (in the hidden directory)
- added configurable external matrixwriter and text editor option on second row of FEM menu (used by AV)
- added delay option between batchplots (wait for key or pause for X seconds between plots)
- STYPE now only recalls current type, SFRAM and STRUS set type
- the CKFEM program is now part of the FEM48 library
- small code improvements
- removed some unsupported plot entries, speeds up plotting
- all plots now made without removing the menu, so no more keypress to resume calculator use (this also eases programmable use)
- removed ->PICT option, added ->STK option for plots
- renamed TSIGN option to [upwards arrow]M and it now only works on the moment plot
- bugfix: nodal coordinates displayed with PRINT module now in X and Z (was X and Y)
- bugfix: MINFO (QUERY menu) text labels now OK (MLU to MLX, MLT to MLZ)
- bugfix: when QUERY plots are constant, both the + and - labels now have the same value
- removed recalculation warning
- removed confirmation of PGLD and PGRS commands
- size: you might want to buy an extra RAM card :(
- but the libs are also available in a compressed version :)

VERSION 4.0 PRE-RELEASE

- added displacement loads for nodes (NLD) format: [[Node UX UZ RY]], notes: UX/UZ/RX =0 : no displacement load (but also no support!), be carefull with mix and match with the SUPP command!, a degree of freedom (i.e. UZ of node 10) can NOT have a SUPP and NLD at the same time!
- added possibility of transverse loads on members with end releases
- added member load local X trapezoid MLX
- removed MLUNI
- renamed MLT to MLZ
- renamed NL to NLF
- restructured INPUT and RESULT menus
- programming lib (1604) not available yet
- lib and modules also "BZ compressed" available, this shaves +/- 25% off of the size and is about 10% slower, the uncompressed and compressed modules can be mixed and matched, the presence of BZ is not needed, the UBZ decompressor is built-in
- made program CKFEM available: checks version/availability of loaded FEM48 modules
- no manual yet, please use manual of version 3.2 and read this changes.txt file carefully
- Note: Not all features that were "advertised" have made it to the final release. It would also still be possible to create a significant speed increase by completely rewriting FEM48. However, the resulting *final* package of FEM48 is probably the most powerful and easy to use Structural Analysis suite available to date for any (HP) calculator.

VERSION 3.3 PRE-RELEASE

- modular(!) design:
- lib 1605: FEM library (main library with interface)
- lib 1606: Member Query menu (nullnamed lib, QUERY in RESULT menu)
- lib 1607: Structure Wizard menu (nullnamed lib, LeftShift-INPUT)
- lib 1608: String output / Print menu (nullnamed lib, LeftShift-RESULT) * NEW FEATURE *
- lib 1604: Command lib (for programming FEM, not available yet)
- All menus accessible through FEM menu from main FEM lib (except lib 1604)
- FEMpar variable now stored in hidden directory
- RNDing when recalling results, thus now member query with full precision
- renamed commands, most notably: CONST > SUPP, SUPPR > REAC, NOCO > DET
- Changed input for MREL: 1=release, 0=fixed to node
- Changed input for SUPP: 0=free, 1=fixed, <0=spring
- Added error message for UZ and RY member query when member has release at first node (BTW: still no transverse loads on members with MREL possible!)
- Added PGLD (purge loads) command
- Added REVIEW (RightShift-DownArrow) for all key planes to see all unshifted, right-shifted and left-shifted softkey actions (USE THIS!)
- Added numeric labels for queried member and no. of keypoints
- Replaced ML lineon routine by standard ML lineon command
- Changed support grobs
- Separated forces and displacement output/plots in query menu (MFORC,MDISP > N,V,M,UX,UZ,RY)
- No more "Undefined Loads" error when plotting just the geometry
- Restyled all INFO commands
- Restyled various menus

VERSION 3.2

BZ compressed

- see 3.2pro
- compressed subroutines so lib is much smaller (-7 kB !)
- not programmable!
- adds support for the FWZRD library (LS INPUT in FEM menu)

pro

- see 3.2std
- now also available as FEM49, thanks to Edwin Córdoba who ported the FEM48 library to the HP49

std

- added support for the EDITB command of Meta Kernel
- added fast DOVARs routine for OPEN command
- fixed a small bug with respect to a call to FEM_cfg (not a calculation bug)
- now almost all commands are programmable (Programmable Edition no longer separately available)
- Student Edition no longer available
- updated manual to reflect the changes

VERSION 3.1

pro

- see 3.1std
- fixed bug in batchplot routines for the NPLT, VPLT, MPLT, UXPLT, UZPLT and RYPLT commands
- now the member number is displayed on the QUERY plots
- modified MINFO display
- size: 28092.5 bytes

std

- added recalculation warning for CALC
- renamed ERASEFEMcfg to ERASEFEM
- changed some Yes/No routines and displays (SAVE overwrite)
- changed STYPE display
- improved the manual
- size: 19121.5 bytes

VERSION 3.0

pro

- see 3.0std
- added X-coordinate to tagged output of XFORC and XDISP
- added batchplots for the NPLT, VPLT, MPLT, UXPLT, UZPLT and RYPLT commands
- now the QUERY menu is accessible from the RESULT menu
- restyled QUERY menu, now MFORC and MDISP available as shifted commands from XFORC and XDISP menukeys
- restyled MINFO, the "look" of the display now matches the rest of the library
- number of keypoints used is now displayed by MINFO
- size: 28154 bytes

std

- FILE FORMAT HAS CHANGED: .FEM files of previous versions can not be used with version 3.0, use the in the FEM48 package, included conversion program, see "File conversion.txt" for more details
- added member end release option for bending moment
- added "busy indicators" to indicate activity when FAST is used
- restyled SINFO and input check display output, the "look" of the display now matches the rest of the library
- renamed TYPE to STYPE
- improved the manual, now a separate Reference Manual and Examples document
- bug fix: now autocalculation during DFOR plots uses FAST (when toggled on) too
- size: 19064.5 bytes

VERSION 2.1

pro

- see 2.1std
- renamed commands: uXPLT > UXPLT, uZPLT > UZPLT, thetaYPLT > RYPLT
- size: 24997.5 bytes

std

- added FAST option, now you can reduce the execution time of calculations by approx 10%
- renamed commands: MLTRAP > MLTRP, MEFORC > MEFOR, MEDISP > MEDIS, INFO > SINFO
- size: 17745.5 bytes

VERSION 2.0

pro

- see 2.1std
- first release of the professional version of FEM48: includes beam analysis
- file format identical to version 2.0std (NOT compatible with file format of older versions)
- improved and modified the docs as to apply to both versions
- as of now the version numbers of the std and pro version will be identical to make an easy comparison possible
- size: 24795 bytes

std

- FILE FORMAT HAS CHANGED: .FEM files of version 1.2 can not be used with version 2.0, use the in the FEM48 package included conversion program, see "File conversion.txt" for details
- added spring constraints, now you can calculate structures with displacement and rotation spring supports, so the format of CONST has changed!
- now the filename is saved in the FEMpar file, this avoids having to enter the filename again when saving your work
- now NDISP also outputs the node number, this to enable easy viewing outside the matrixwriter
- added support for the BZ compressor, available in the FILE menu, this greatly reduces the saved file-size
- before calculation starts old results are deleted from FEMpar to save memory which may be needed during calculation
- now trusses and frames are plotted with different joint grobs for easy recognition of structure type
- added calculated indicator (C) to INFO display
- added second INFO menulabel to INPUT menu
- now the open file choose box is full screen
- added confirmation to PGRES command
- moved PGRES menulabel from 2nd to 1st menurow of FILE menu
- added TYPE rcl (right-shift TYPE)
- renamed MLLIN to MLTRAP (from linear to trapezoid)
- renamed MFORC to MEFORC (Member End FORCE)
- renamed MDISP to MEDISP (Member End DISPlacement)
- size: 17568 bytes

VERSION 1.3STD AND 1.3PRO

- released only as beta-version

VERSION 1.2STD

- added file browser, now you can save (and open) your structures with a unique name
- improved/modified the docs
- size: 16428 bytes

VERSION 1.1STD

- changed INPUT menu, now displayed faster
- removed CFGR menu, now all config commands available in necessary menus
- now multiple occurrences of a node in the nodal loads array is supported, as was already the case with member loads
- added status display for input check
- added autoview recalled input/output with built-in matrixwriter or MATRIX
- added nodes and constraints option for plotter
- small code improvements
- modified the docs
- size: 15650 bytes

VERSION 1.0STD

- first full release
- changed interface type from browser-based to menu-based (faster and more "open" interface)
- added plotter
- added linear (trapezoid) member loads
- changed all loads array format
- removed the file open/save option, now works with variable: FEMpar
- removed concentrated member moment load bug
- removed releases option, didn't work out (truss option still available)
- size: 15312 bytes

VERSION 0.2BETA

- released february '99
- initial release to the public
- size: 14430 bytes