New Features of CadnaR Version 2021 MR1

*The new features of **CadnaR** 2021 are in Italics.*

Calculation / Configuration

- Calculation of NR and NC noise rating curves according to VDI 2081-1. Output for each receiver or as spatially averaged level spectra (in menu Options).
- When aborting a calculation with the particle method, the results of the last iteration can now be kept (default = activated)
- Calculating the workplace level for source groups now taking into account the floor as fully reflective (previously: actual absorption of the room's boundary surface)
- Configuration of calculation: „Generate particles per octave" now activated by default
- Calculation of standard deviations (incl. number of points) in the table "Spatially averaged reverberation times (receivers)"
- *batch calculations available in CadnaR (new commands on Calculation menu: „Batch Mode on/off", „Choose Batch-Directory", „Select Batch-Calculations") - requires option CAL*
- *partial echograms are saved for each source-receiver combination separately (new commands on Extras menu: „Calculate/Delete/Auralize Partial Echograms", new dialog Partial Echogram Auralisation)*

CadnaR Objects

- All point and polygon objects: Object snap when moving / creating polygon points while pressing the ALT key
- Receiver: New diagram Level spectrum for displaying the sound level spectrum incl. NR and NC noise weighting curves
- Receiver chain: optional specification to use rounded values of $L\_p,A,S,4m$ and D_2,S for calculation of "Propagation class" and display in dialog
- Bugfix, object Box-Type Source: Corrected conversion to LwA when using LwA'' and non-emitting surfaces
- Receiver: New attributes S_NC and S_NR to show the single number value according to noise weighting curves of VDI 2081-1.
- *new object: vertical grid (line-type object, standing perpendicular on the floor, can be lifted up, with heights z1 and z2) - requires option VIS (plus option CAL to calculate the voxel grid)*
- *new object: 3D-grid (forming a closed polygon line with any number of points and height per point) - requires option VIS (plus option CAL to calculate the voxel grid)*
- *optional color section 3D-appearance per object (via each object dialog, button „Options for 3D Representation")*
- *new object attribute: ID_NO_TREE (evaluation of ID ignoring the ObjectTree part)*

Further New Features

- New language: Italian
- Variants: Double click on a variant in the listbox activates / deactivates it.
- Display of error bars in the diagram "Spatially averaged reverberation times" (receivers & grid)
- Adjustment of the line width in the diagrams via the corresponding menu item. Fine adjustment via CTRL and +/-
- Definition of a prototype file, which is loaded at every start of CadnaR
- New toolbar icon for accessing "Spatially averaged reverberation times (receivers)". Multiple functionality via pressing CTRL and SHIFT for direct access to table and variant comparison.
- *new Display units dialog (Options menu): In CadnaR, geometrical and other data can be displayed in the main window and in dialogs using different units. Non-metric units can be converted on import (new transformation type "Unit Conversion").*
- *Undo/Redo for additional actions on the context menu (Set Length, Break Lines, Break Areas)*
- *command/action „Convert to" now enables conversion from and to vertical grid and 3D-grid (e.g. convert from PolyMesh)*
- *command/action "Break into Pieces" with new option "Split at closest polygon point"*
- *new command/action "Normalize rotation angles" (for box-type obstacle, box-type source and sections): conversion of larger rotation angles to the angular range -45°<=a<45°, with adaptation of the coordinates and the selection of the non-emitting sides of box-type sources*

Miscellaneous

- Consistency Check for all receiver chains: Check if height of chain points are equal to source height.
- Consistency Check: Warning at calculation of "receiver is workplace at source" with LpA for a single source, if 0. order is not calculated with image sources.
- *Consistency Check: warning in case of a modified expression in the root of the ObjectTree (warning if group expression !* changed)*
- *Consistency Check: warning when point sources and receivers are detected inside box-type objects*
- *Consistency Check: warning with partial echogram calculations without valid point sources and receivers*