CONTENTS

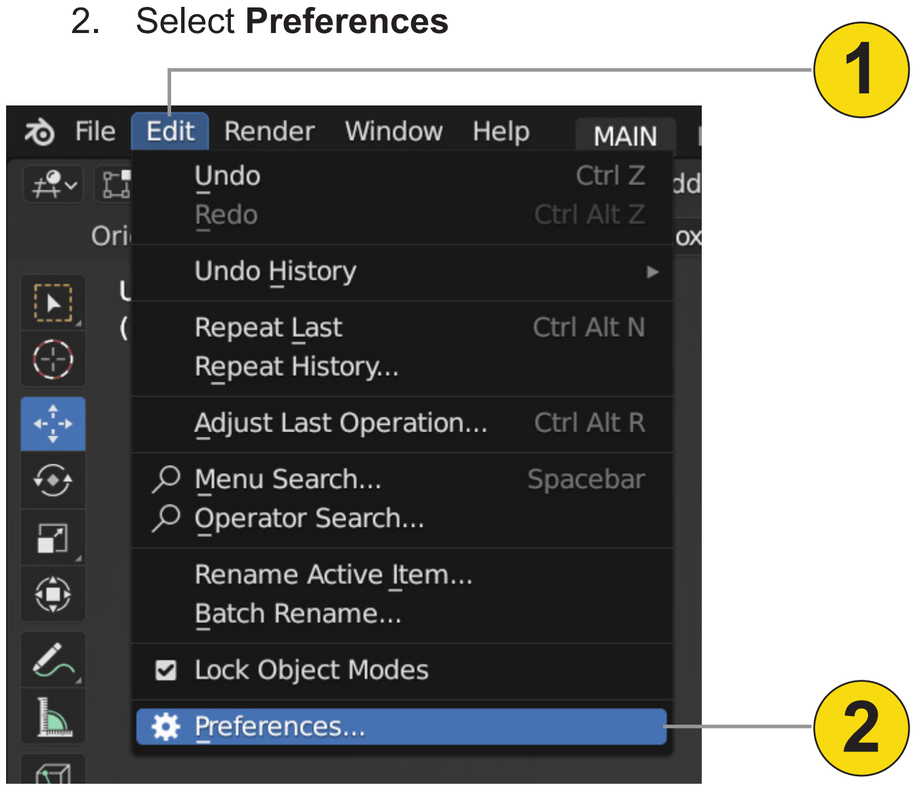
INSTALLATION

Requirement

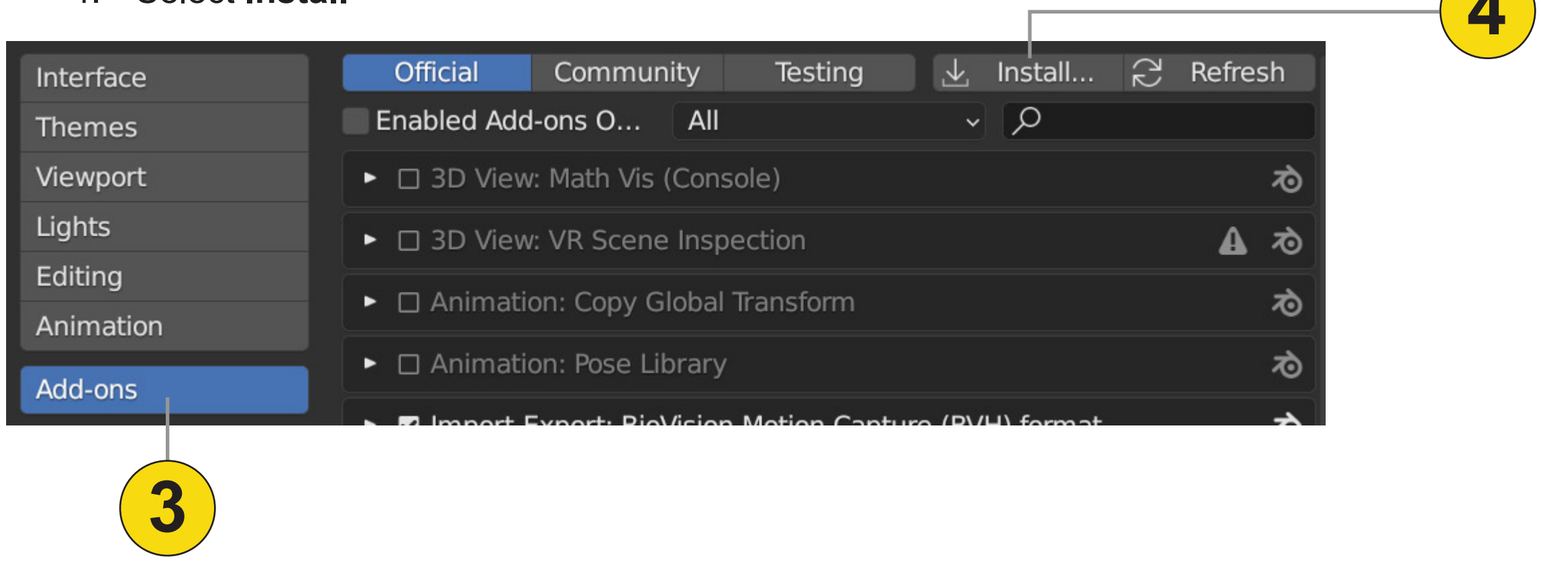
1. Blender 2.92 - 3.6

Install

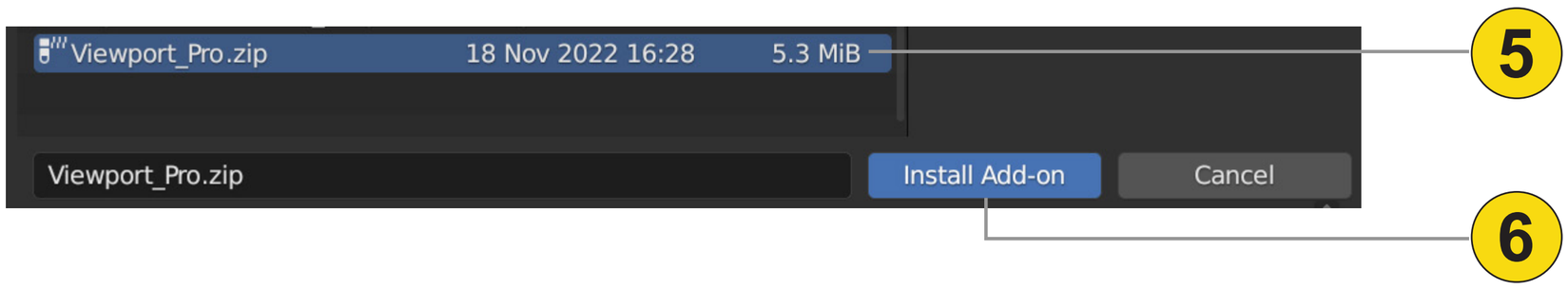
1. Select **Edit**
2. Select **Preferences**



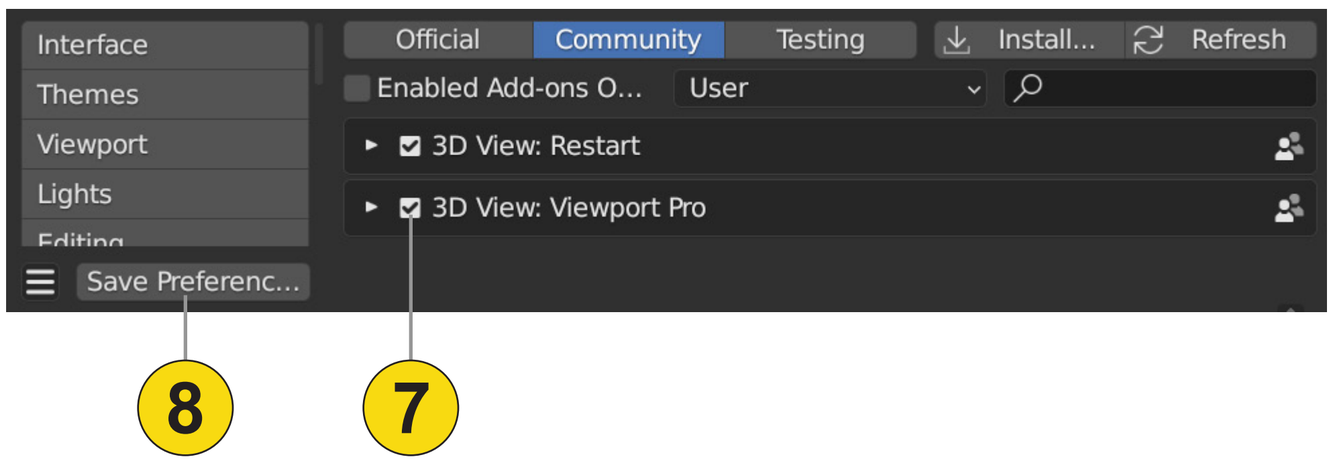
3. Select **Add-ons**
4. Select **Install**



5. Select the zip file named **Viewport_Pro**
6. Select **Install Add-on**



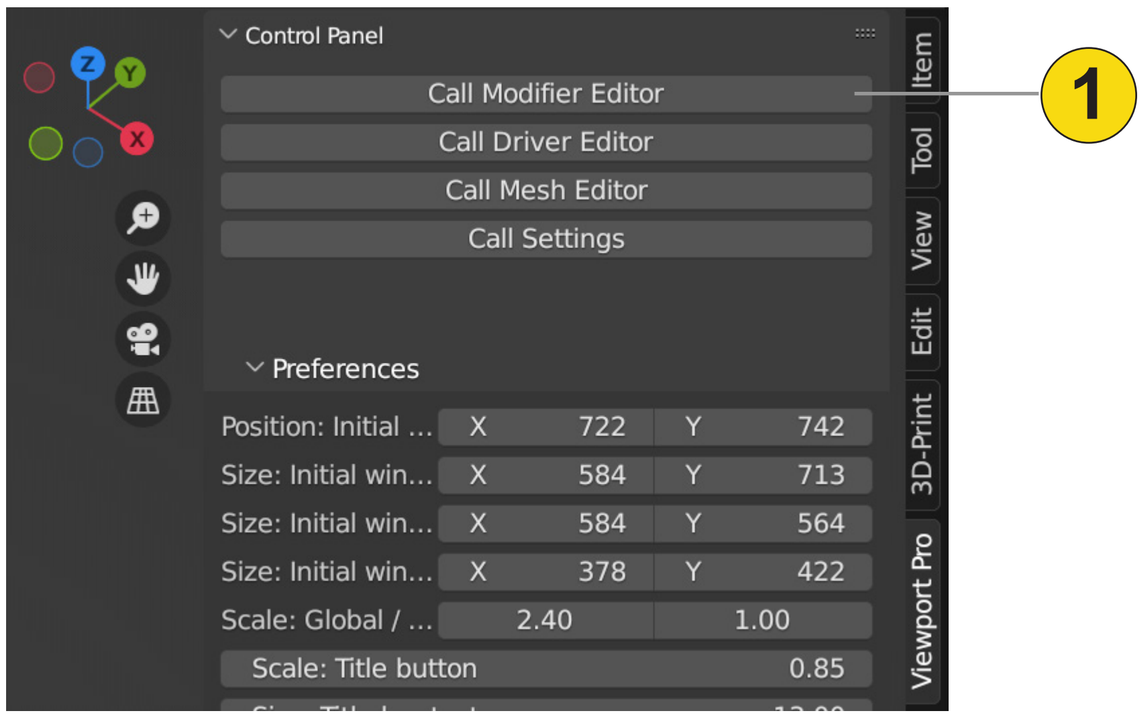
7. Enable the checkbox
8. Save Preferences



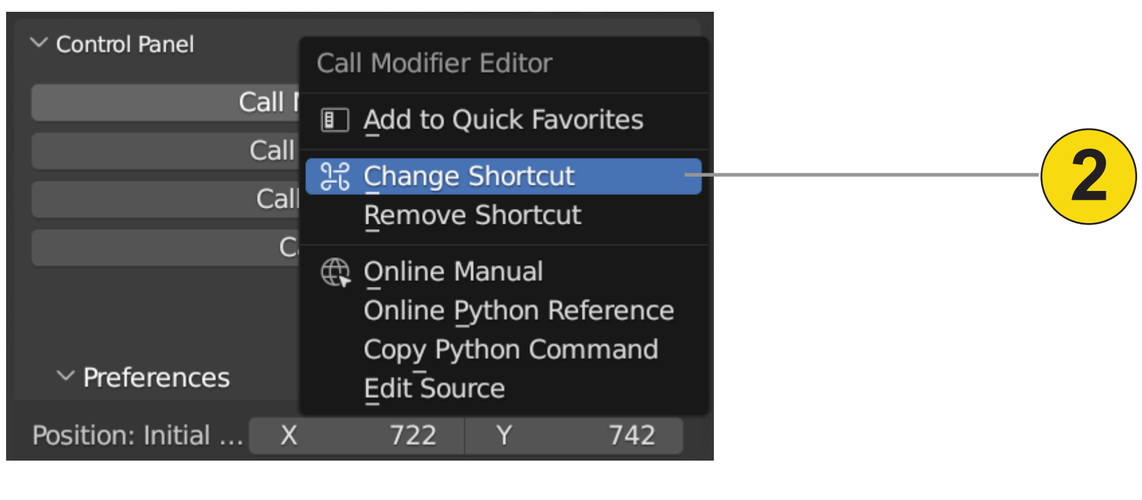
CONTROL PANEL

You can edit most add-on settings from the Viewport N-panel.

1. Call the context menu (*Blender default shortcut: Right click*)

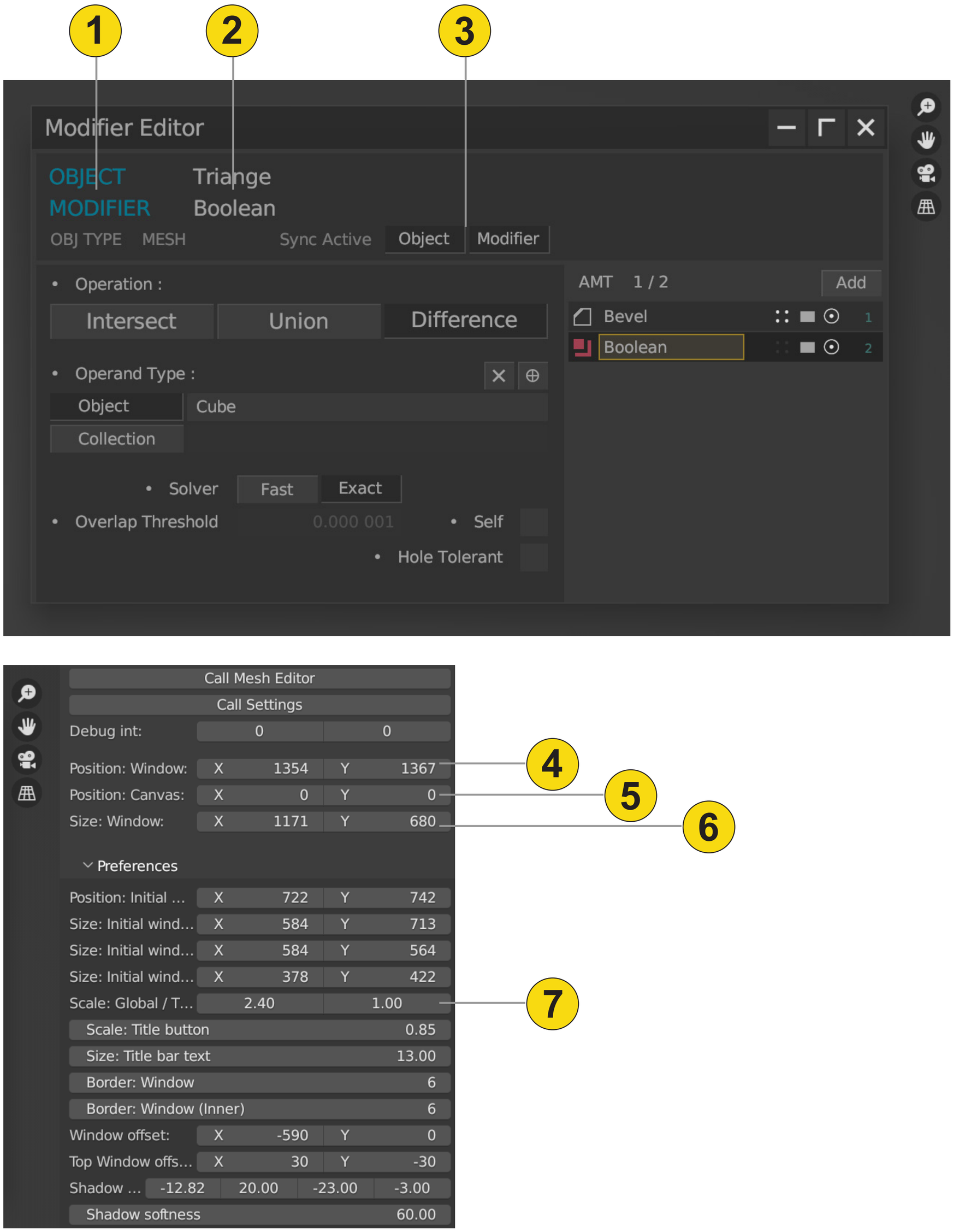


2. Assign Shortcut to operator



MODIFIER EDITOR

The Modifier Editor displays the object's active modifier.



1. Select the *OBJECT / MODIFIER* button to change the current display object / modifier.

Default Keymap 1	Select Button (Press)
Keystroke	Left Mouse
Value	Press
End Value	-
Region	Button

2. Double-click the object / modifier name to rename the object / modifier.

Default Keymap 1	Rename
Keystroke	Left Mouse
Value	Double Press
End Value	-
Region	Button

Default Keymap 2	Rename
Keystroke	F2
Value	Press
End Value	-
Region	Button

3. When *Sync Active* is enabled, the editor's object / modifier data will follow the active object / modifier in the 3D viewport.

Default Keymap 1	Select Button (Press)
Keystroke	Left Mouse
Value	Press
End Value	-
Region	Button

4. Control the active window position. You can also control the window position through the keymap.

Default Keymap 1	Title Bar Move
Keystroke	Left Mouse
Value	Press
End Value	Release
Region	Title Bar

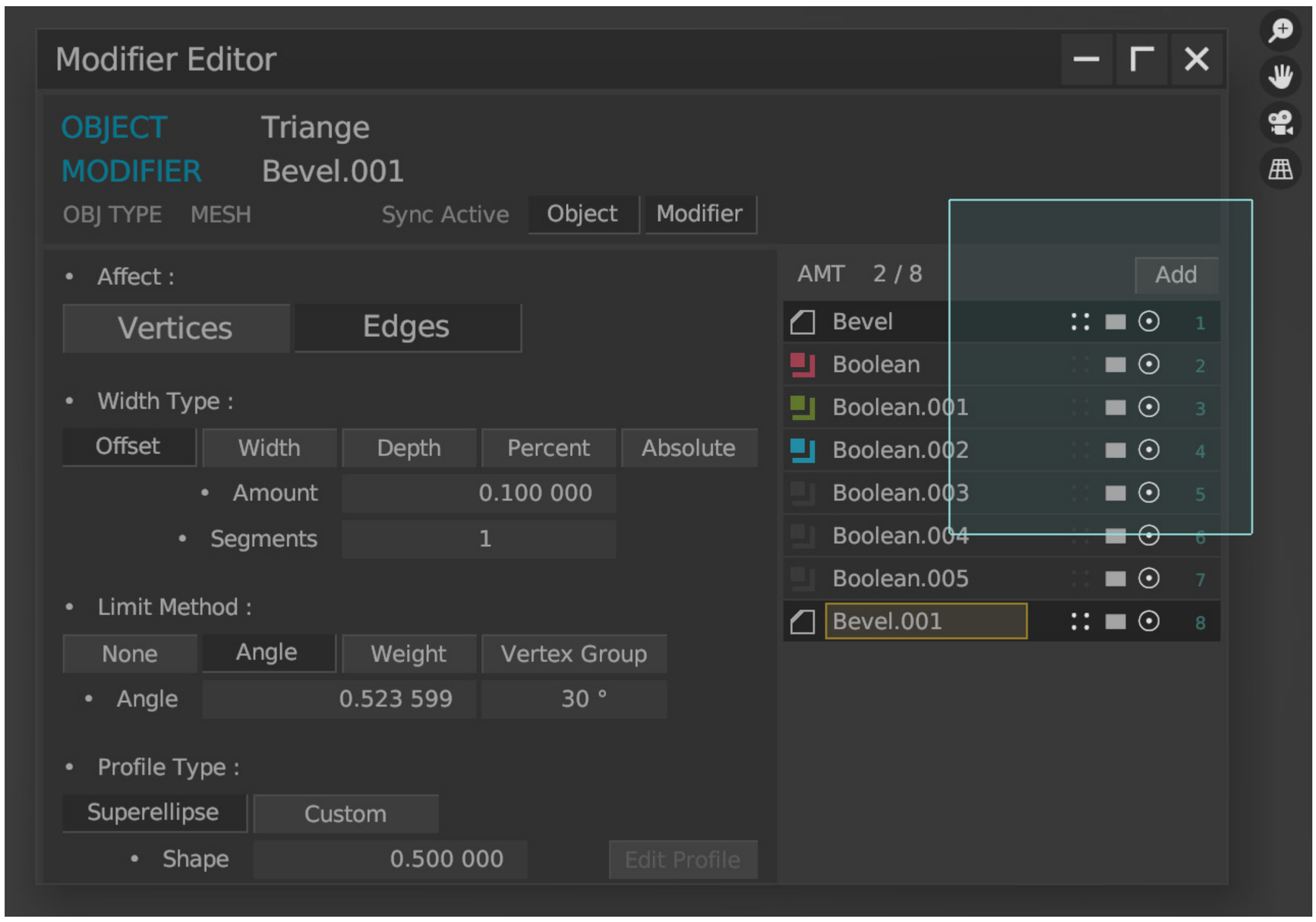
5. Controls the canvas position of the active window.

Default Keymap 1	Pan Global
Keystroke	Right Mouse
Value	Drag
End Value	Release
Region	Active window

6. Control Window size.

Default Keymap 1	Window Resize
Keystroke	Left Mouse
Value	Press
End Value	Release
Region	Active window border

7. Adjust window scale from N-panel *(Ignore Blender Resolution Scale and System Scale)*.



1. Select the modifier to change the active modifier.

Default Keymap 1	Select (Modifier Editor)
Keystroke	Left Mouse
Value	Release
End Value	-
Region	Modifier list

2. Select the modifier to change the active modifier and keep select.

Default Keymap 1	Select Extend (Modifier Editor)
Keystroke	Left Ctrl + Left Mouse
Value	Release
End Value	-
Region	Modifier list

3. Dragging a selection box to select modifiers.

Default Keymap 1	Select Box
Keystroke	Left Mouse
Value	Drag
End Value	Release
Region	Modifier list

4. Dragging a selection box to extend select modfiers.

Default Keymap 1	Select Box Extend
Keystroke	Left Ctrl + Left Mouse
Value	Drag
End Value	Release
Region	Modifier list

5. Move the canvas from the list of modifiers.

Default Keymap 1	Pan (Modifier Editor)
Keystroke	Middle Mouse
Value	Drag
End Value	Release
Region	Modifier list

Default Keymap 2	Pan (Modifier Editor)
Keystroke	Space
Value	Press
End Value	Press
Region	Modifier list

6. Change the modifier name.

Default Keymap 1	Rename
Keystroke	Left Mouse
Value	Double Press
End Value	-
Region	Modifier list

Default Keymap 2	Rename
Keystroke	F2
Value	Press
End Value	-
Region	Modifier list

7. Select all modifiers, deselect all inactive modifiers when all modifiers are selected.

Default Keymap 1	Select All
Keystroke	A
Value	Press
End Value	-
Region	Modifier list

8. Activate top modifier.

Default Keymap 1	Set Active Up
Keystroke	Mouse wheel up
Value	Press
End Value	-
Region	Active Window

9. Activate bottom modifier.

Default Keymap 1	Set Active Down
Keystroke	Mouse wheel down
Value	Press
End Value	-
Region	Active Window

10. Activate top modifier (Extend).

Default Keymap 1	Set Active Up Extend
Keystroke	Left Ctrl + Mouse wheel up
Value	Press
End Value	-
Region	Active Window

11. Activate top modifier (Extend).

Default Keymap 1	Set Active Down Extend
Keystroke	Left Ctrl + Mouse wheel down
Value	Press
End Value	-
Region	Active Window

12. Move the modifier up.

Default Keymap 1	Modifier Move Up
Keystroke	Left Shift + Mouse wheel up
Value	Press
End Value	-
Region	Active Window

13. Move the modifier down.

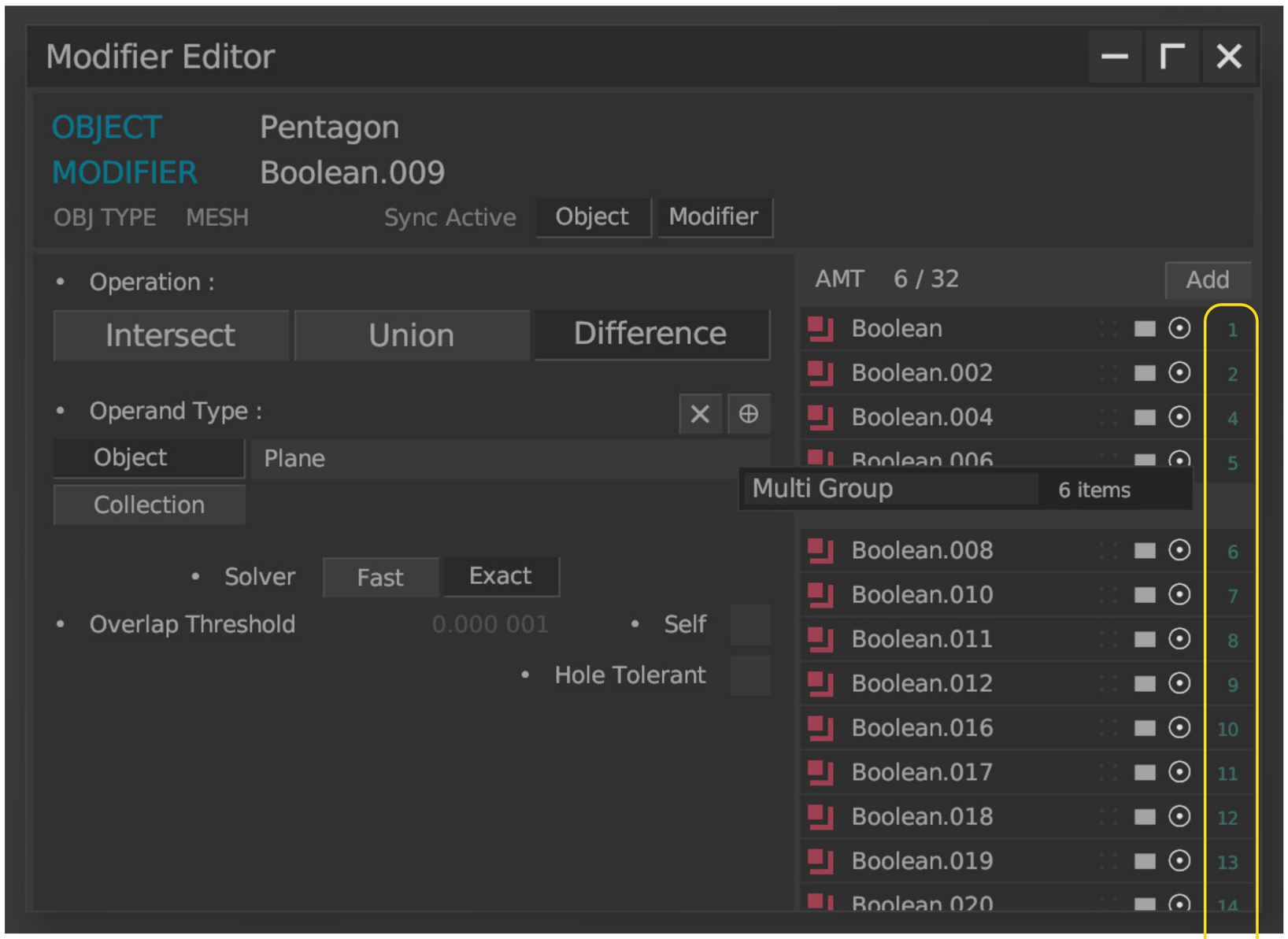
Default Keymap 1	Modifier Move Down
Keystroke	Left Shift + Mouse wheel down
Value	Press
End Value	-
Region	Active Window

14. Delect all selected modifiers.

Default Keymap 1	Modifier Delete
Keystroke	X
Value	Press
End Value	-
Region	Active Window

15. Apply all selected modifiers.

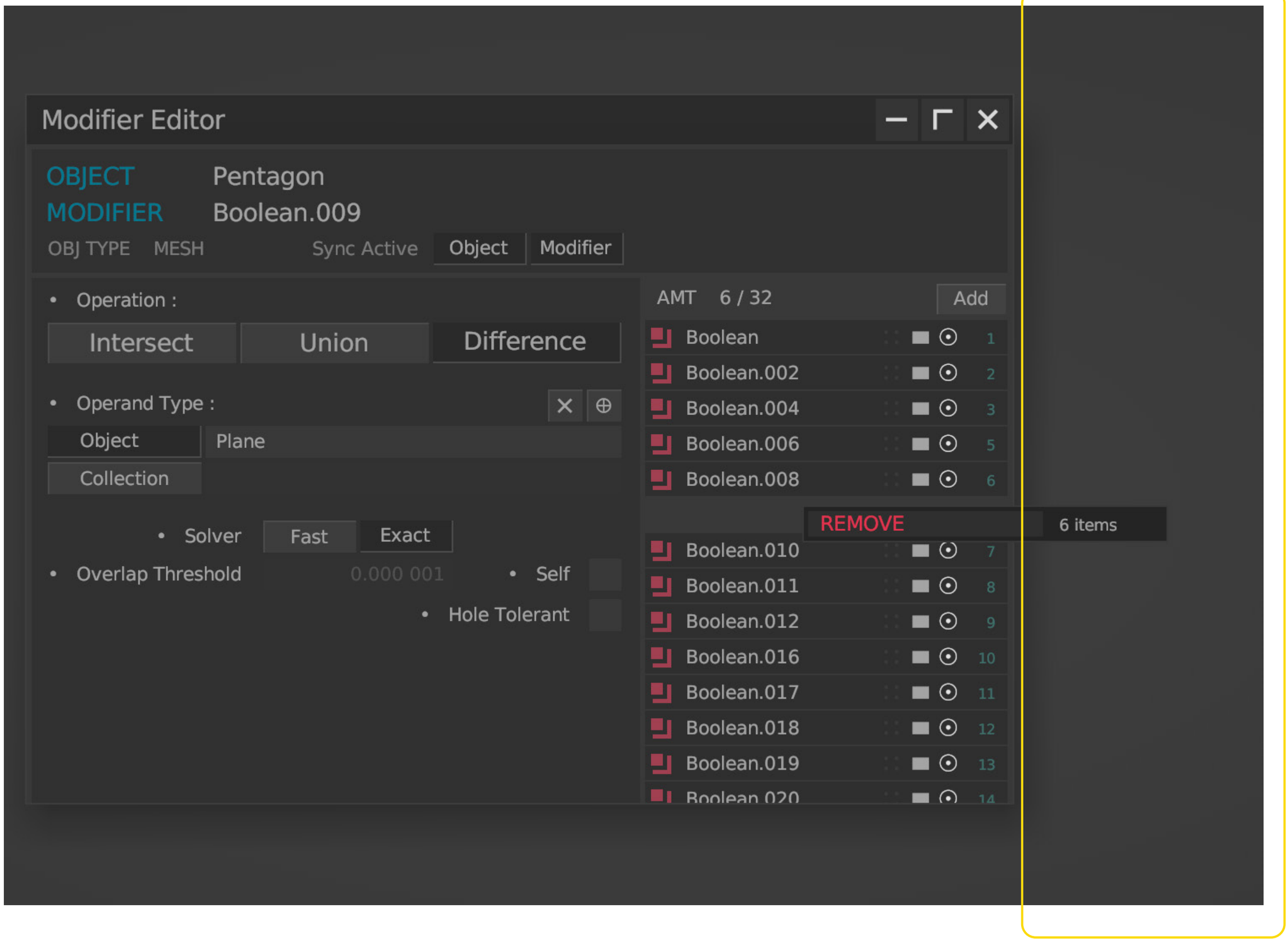
Default Keymap 1	Modifier Apply
Keystroke	Left Ctrl + A
Value	Press
End Value	-
Region	Active Window



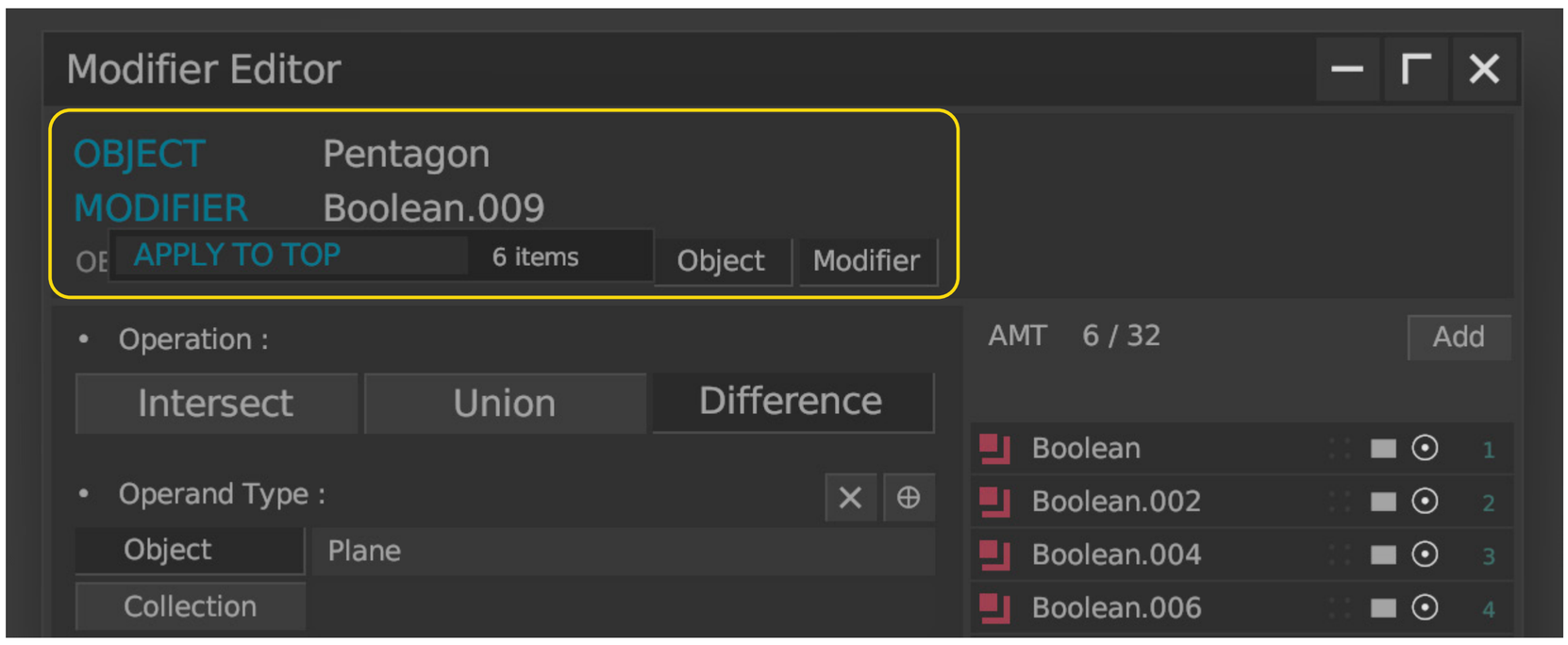
16. Change the order of modifiers. Move / Apply / Delete / Link the modifiers.

Default Keymap 1	Sorting
Keystroke	Left Mouse
Value	Release
End Value	Press
Region	Serial number

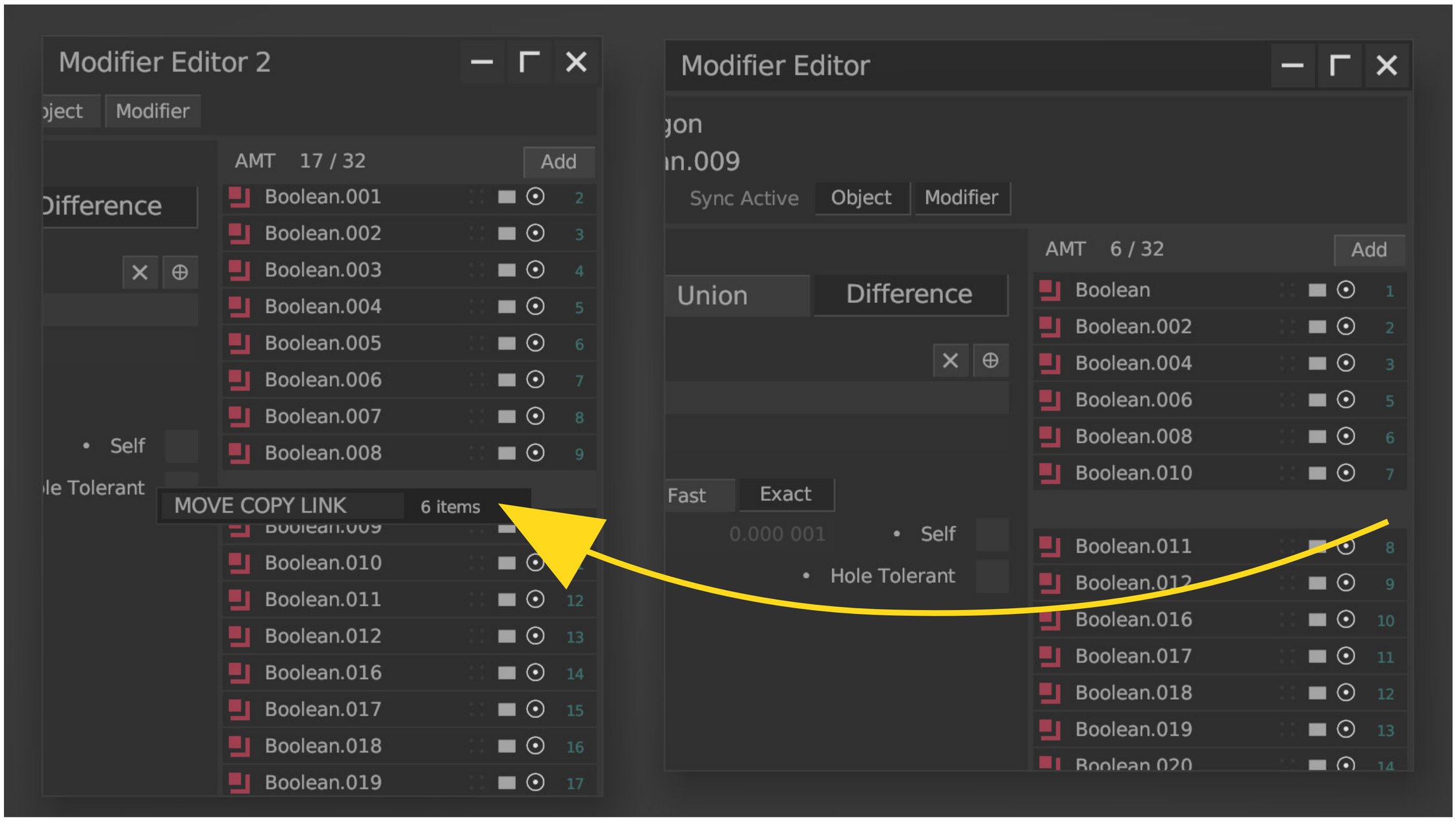
End the Operator to Delete the modifiers when the cursor is on the right side of the editor.



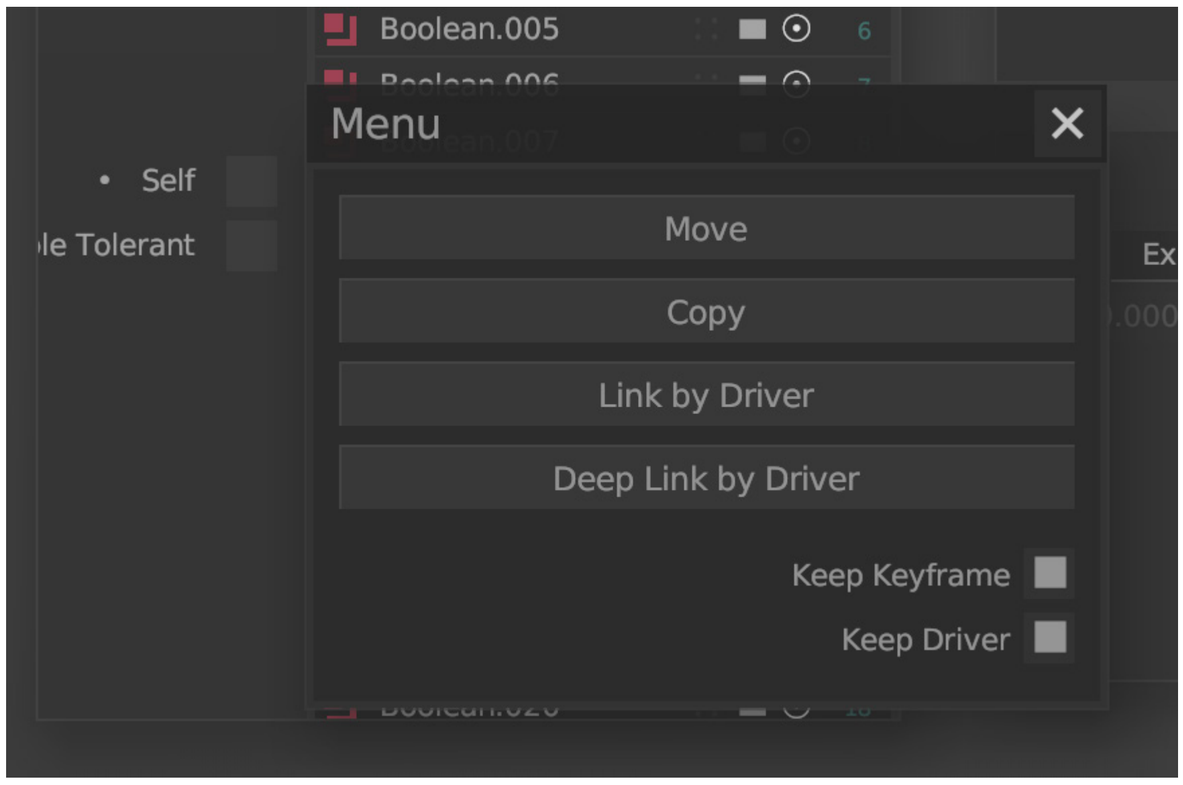
End the Operator to Apply the modifiers when the cursor is in the top area.



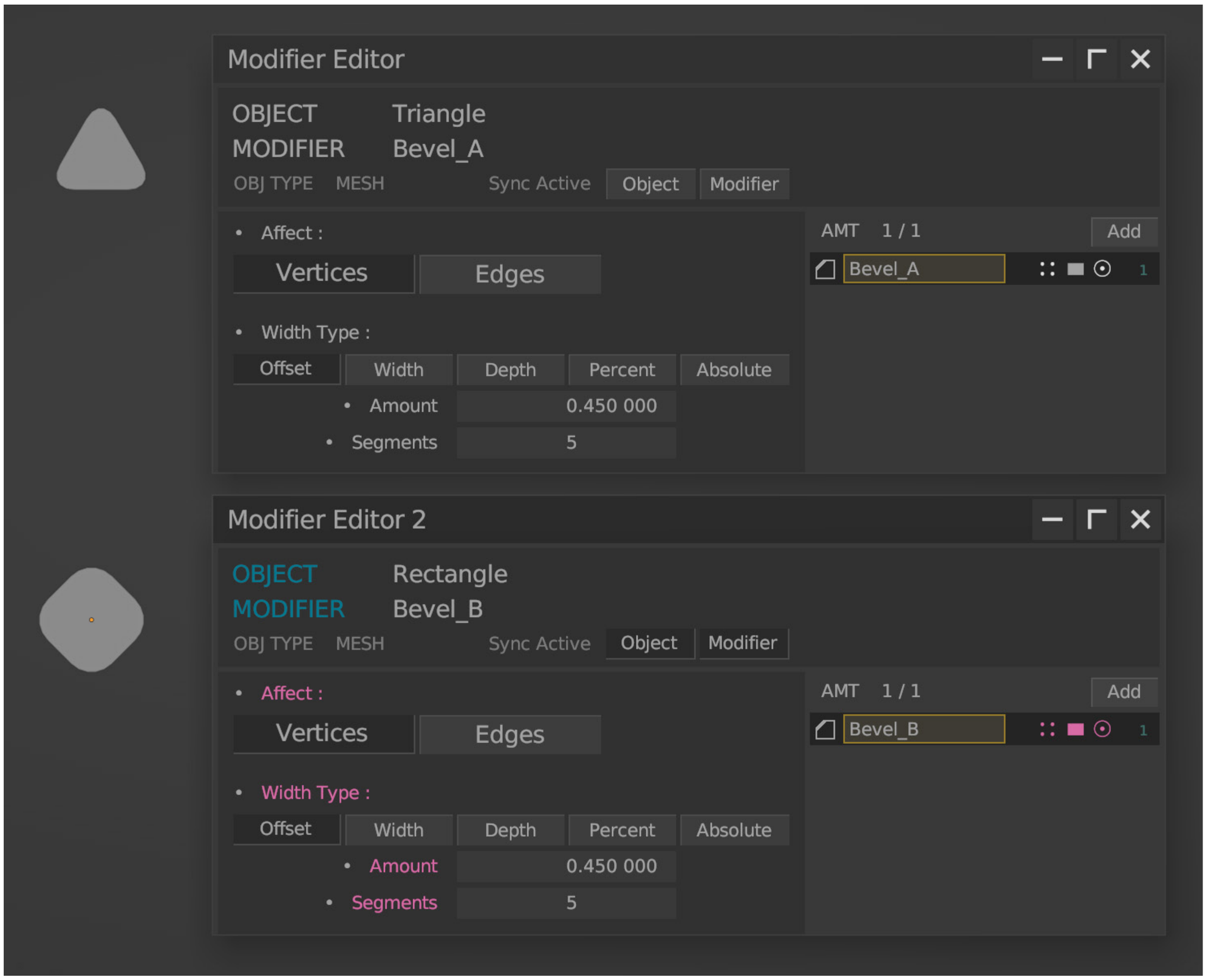
End the Operator to Move / Copy / Link the modifiers when cursor is on another editor.



Link and Deep Link



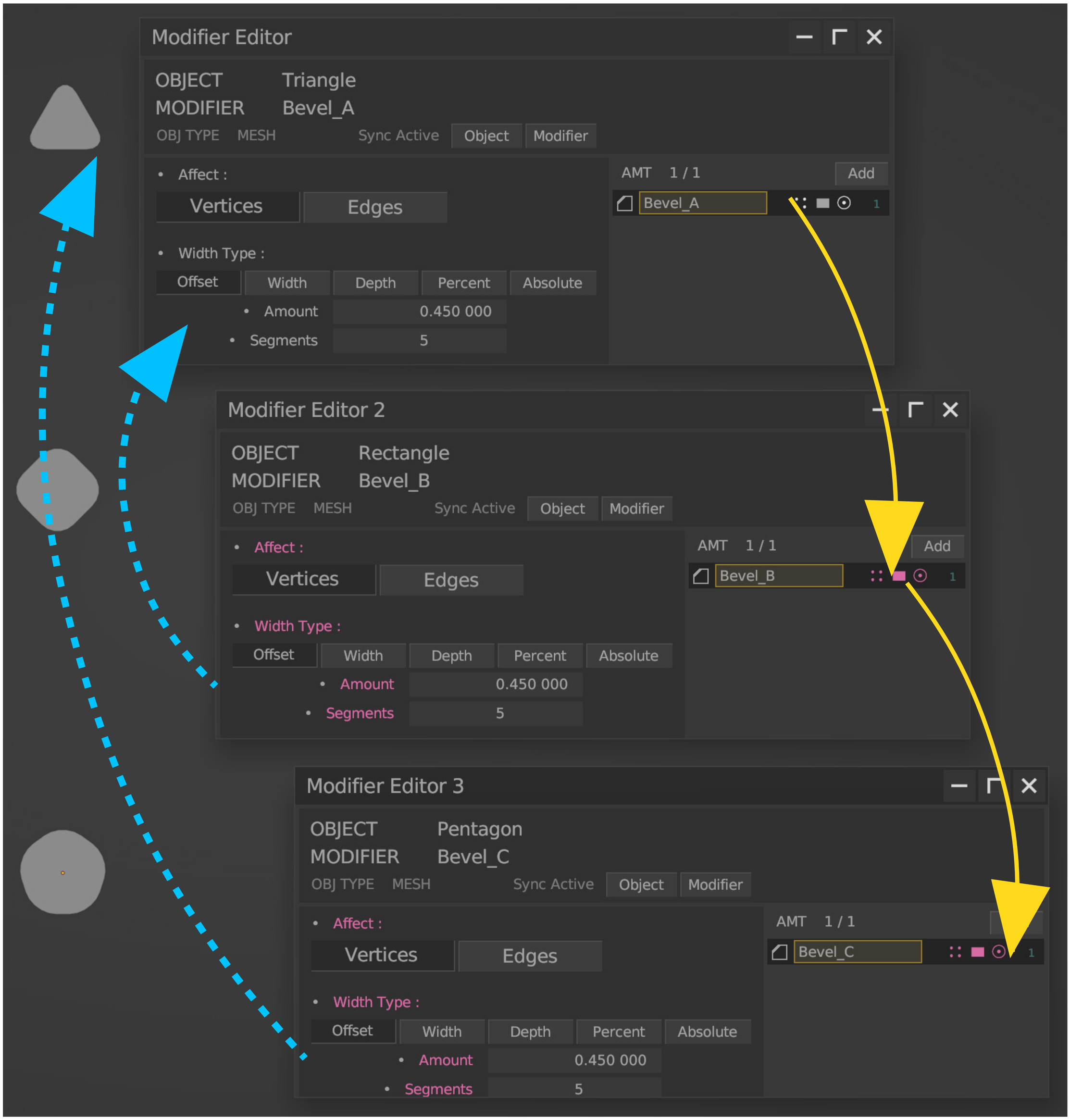
Link by Driver - Reference to the original object, all data for this modifier will be controlled by the driver and updated automatically. In the example below, change the *Amout* of *Bevel_A* from 0.45 to 1, then the *Amount* of *Bevel_B* will become 1.



Deep Link by Driver - Reference to the deepest referenced object.

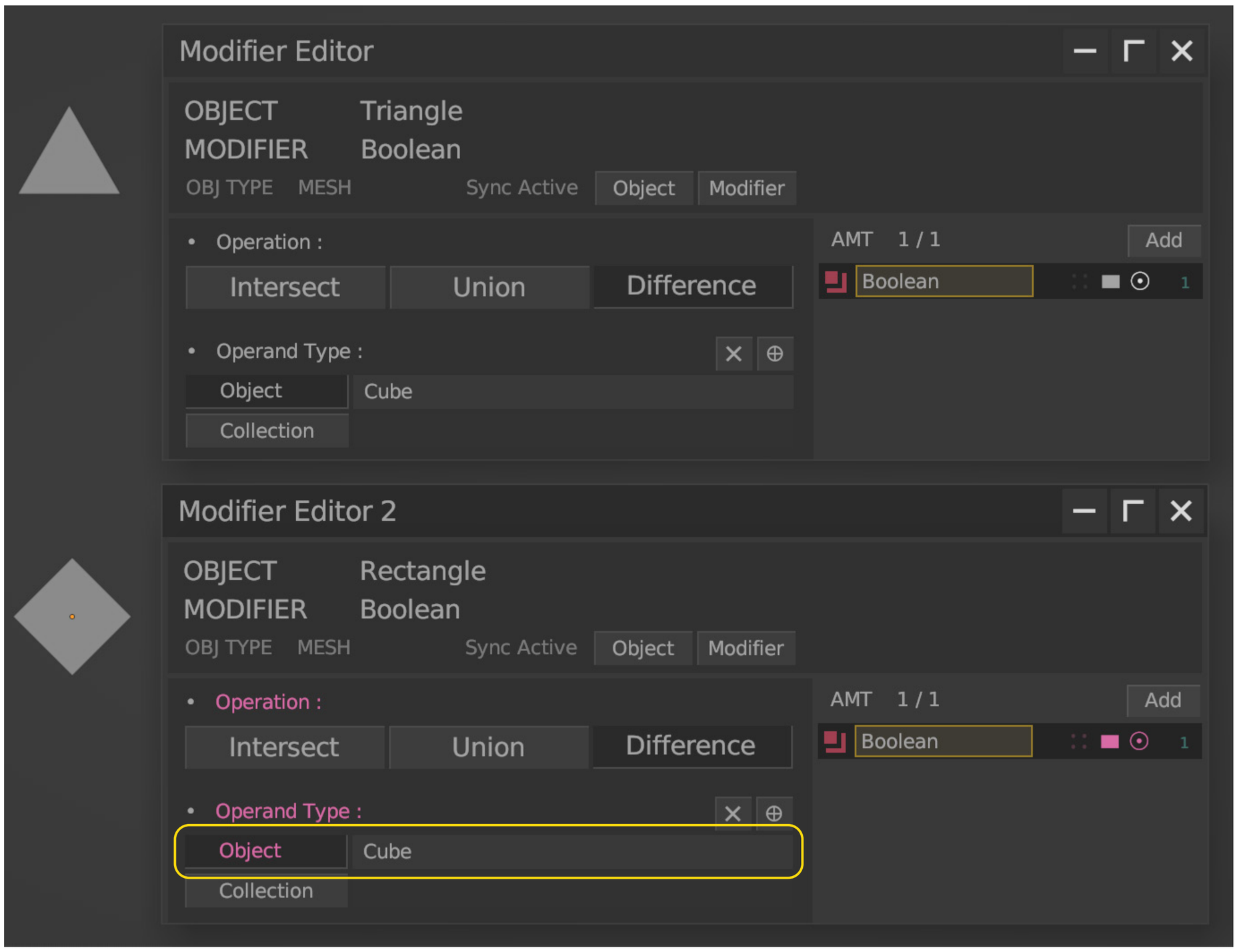
In the example below, since *Bevel_B* is a reference to *Bevel_A*, when *Bevel_B* deep link to *Pentagon*, *Bevel_C* will be a reference to *Bevel_A*.

Change the *Amount* of *Bevel_A* from 0.45 to 1, then the *Amount* of *Bevel_B* and *Bevel_C* will become 1, after deleting *Rectangle*, *Pentagon*'s link will continue to work.

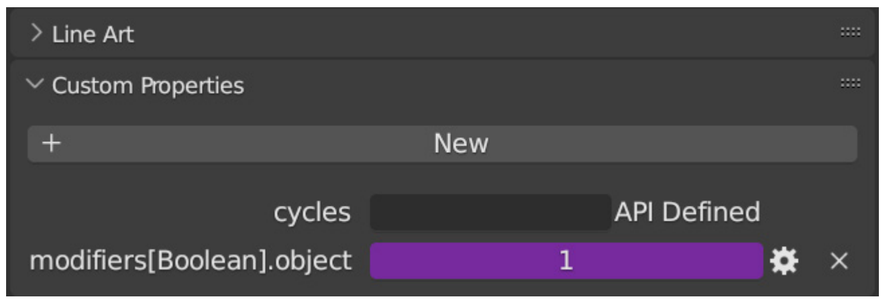


Reference Driver

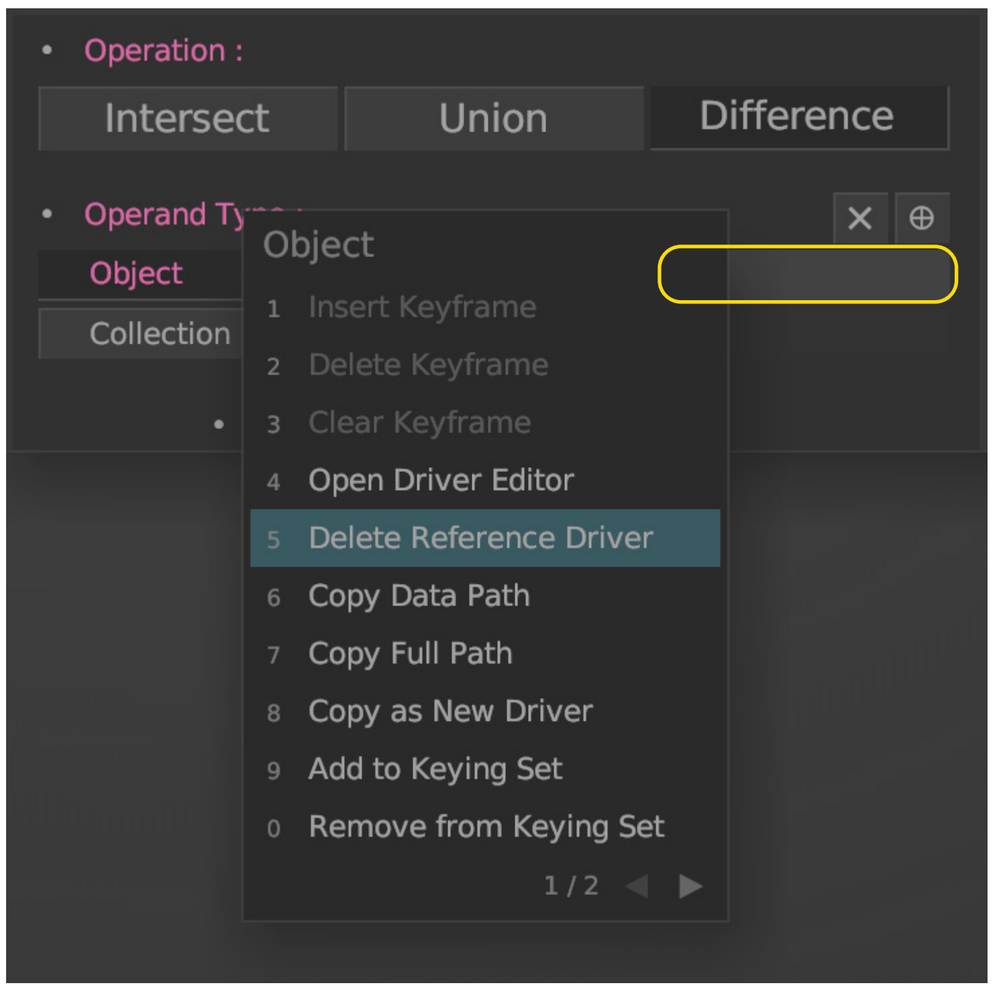
Driver / Keyframe cannot be added due to certain properties in blender (eg: Object of Boolean modifier). There is a new type of driver in this add-on.



When you Link the Boolean modifier, it will add a custom property for updating referenced properties.
From the above example, when the Boolean property (Object) of Triangle changes, the Boolean property (Object) of Pentagon will change accordingly.



Open the Driver Editor or Invoke the context menu from the object name to Remove the Reference Driver and it will automatically remove the custom Property.



1. Call Context Menu.

Default Keymap 1	Context Menu
Keystroke	Right Mouse
Value	Release
End Value	-
Region	Global

Default Keymap 2	Context Menu
Keystroke	Application
Value	Press
End Value	-
Region	Global

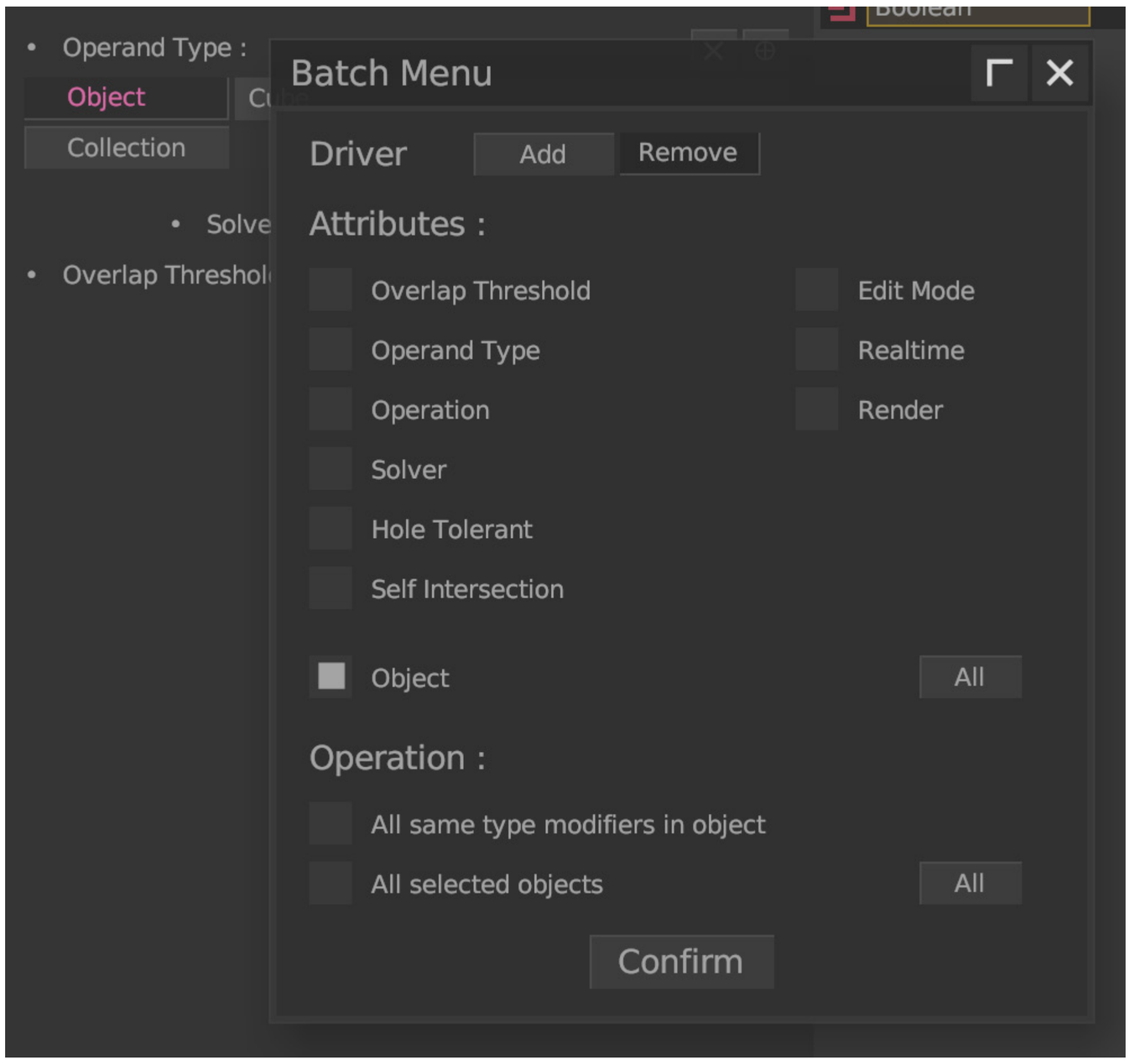
2. Context Menu Button.

Default Keymap 1	Button 5
Keystroke	5
Value	Press
End Value	-
Region	Context Menu

Default Keymap 2	Button 5
Keystroke	Numpad 5
Value	Press
End Value	-
Region	Context Menu

Batch Menu

Invoke the Batch Menu from context menu or via keymap.

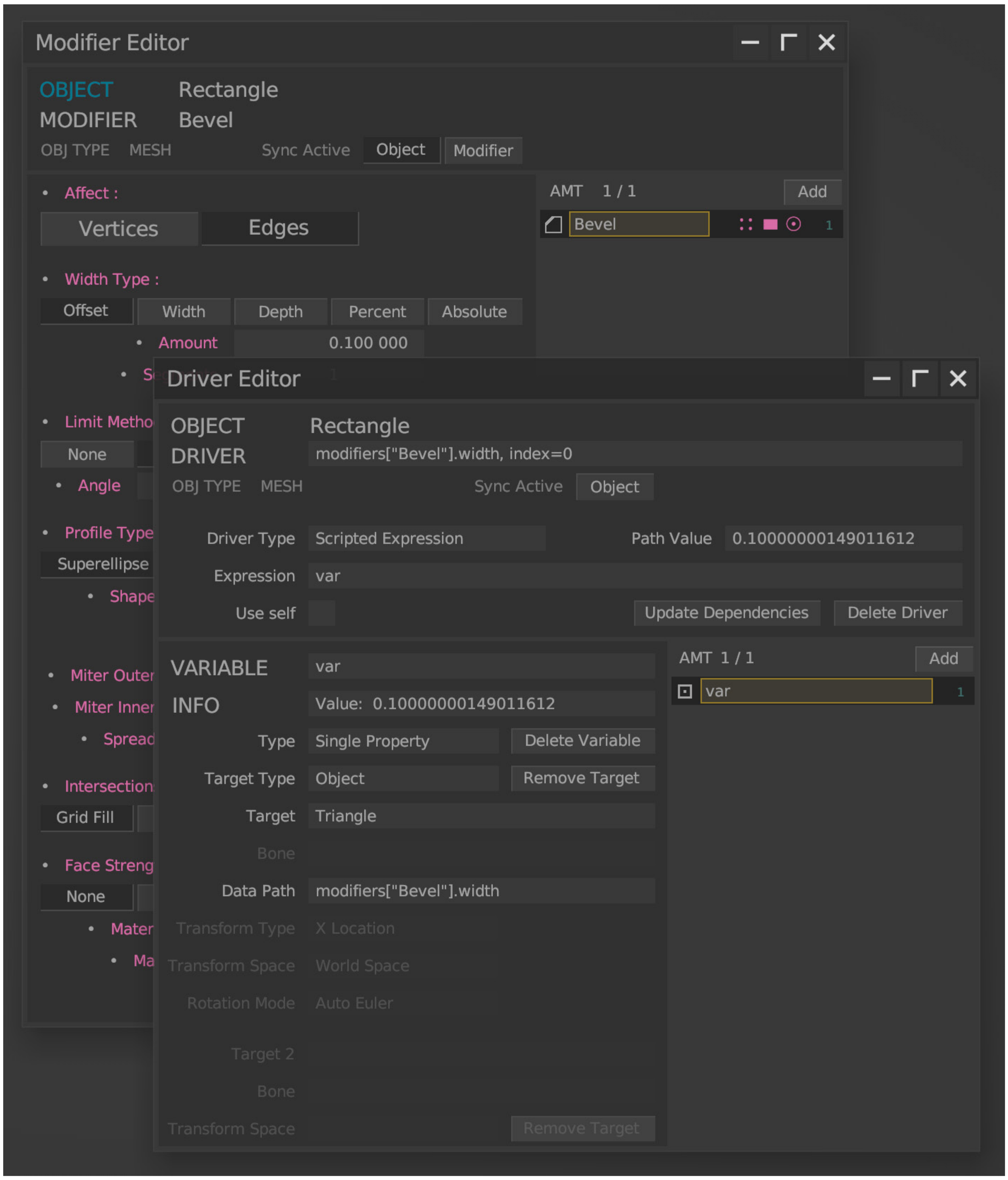


1. Invoke Batch Menu.

Default Keymap 1	Batch
Keystroke	Left Alt + A
Value	Press
End Value	-
Region	Button

DRIVER EDITOR

Invoke Driver Editor from Properties of Modifier Editor or via N-Panel / Shortcut.
If the Data Path of the Property does not have a driver, it will add the driver to the object.

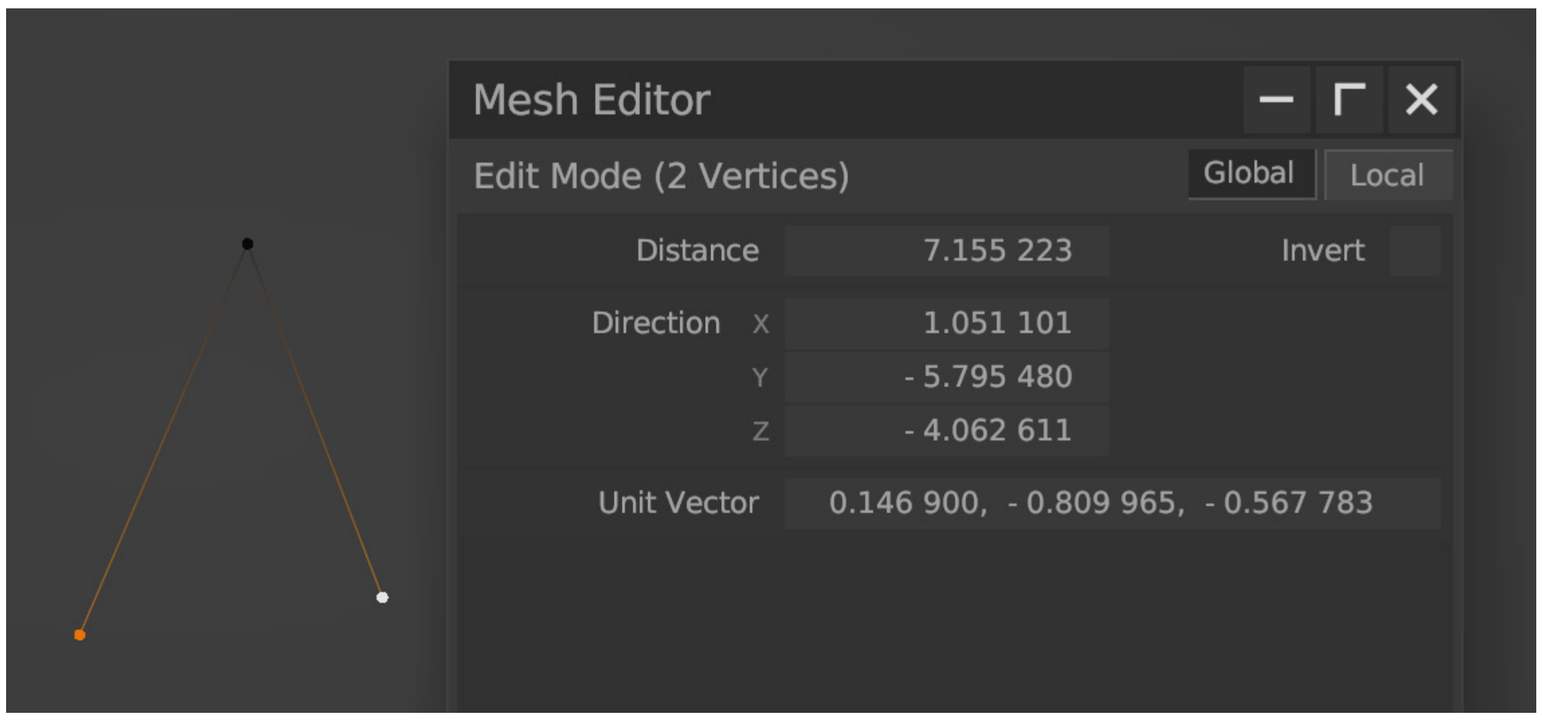


Driver variable can Sorting / Move / Copy like the Modifier Editor.

MESH EDITOR

Invoke Mesh Editor via N-Panel / Shortcut.

Mesh Editor allows users to edit distance / angle / normal etc. mesh data in Edit Mode.



Distance

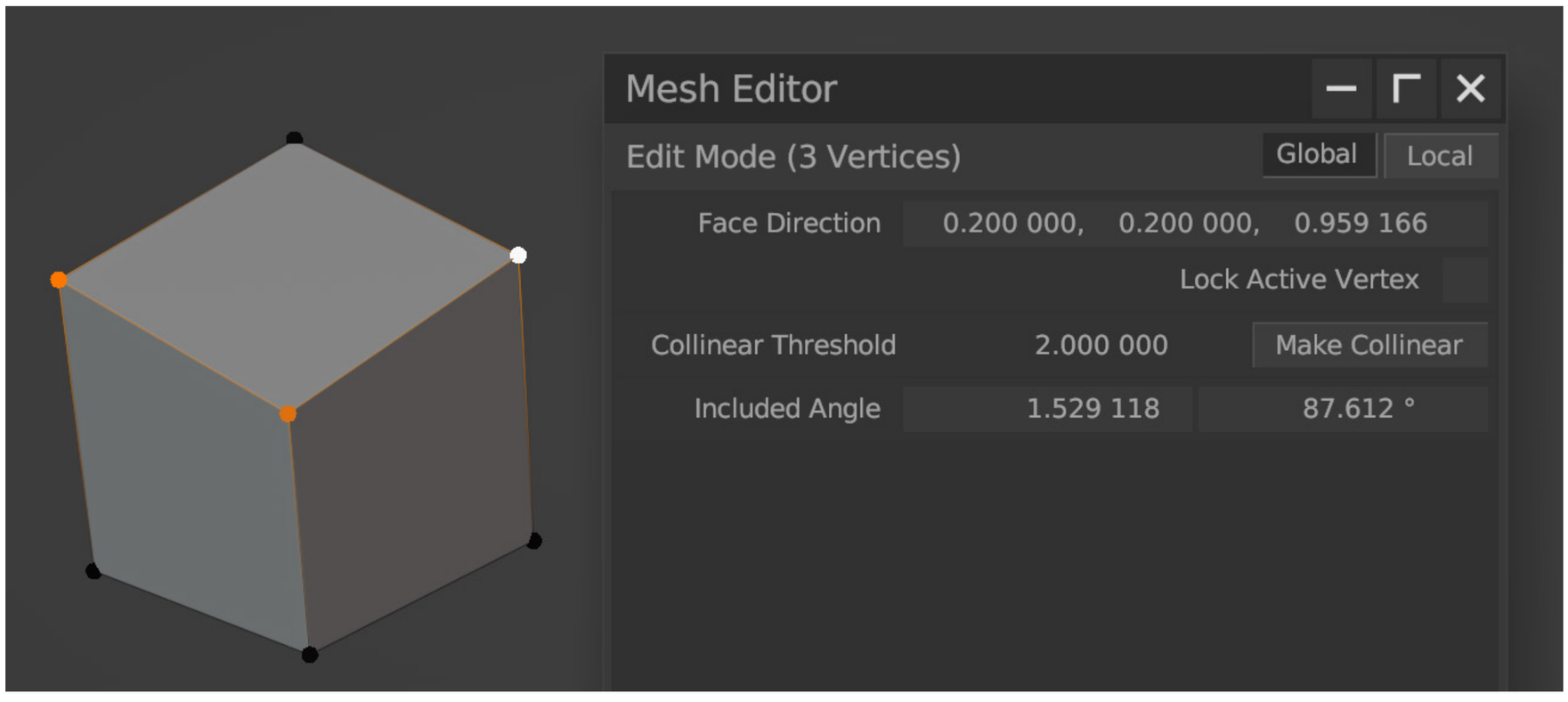
When edit the Distance between 2 points, it will keep the Direction and moving from the active point.

Direction

The Direction of 2 vertices points to the active vertex by default.

Unit Vector

When editing the directional unit vector, the distance between 2 points is maintained.



Face Direction

Unit vector direction of Face Normal, based on vertex selection order.

Properties: Lock Active Vertex.

Collinear Threshold

In the collinear judgment under a specific accuracy, 0 is the most accurate.

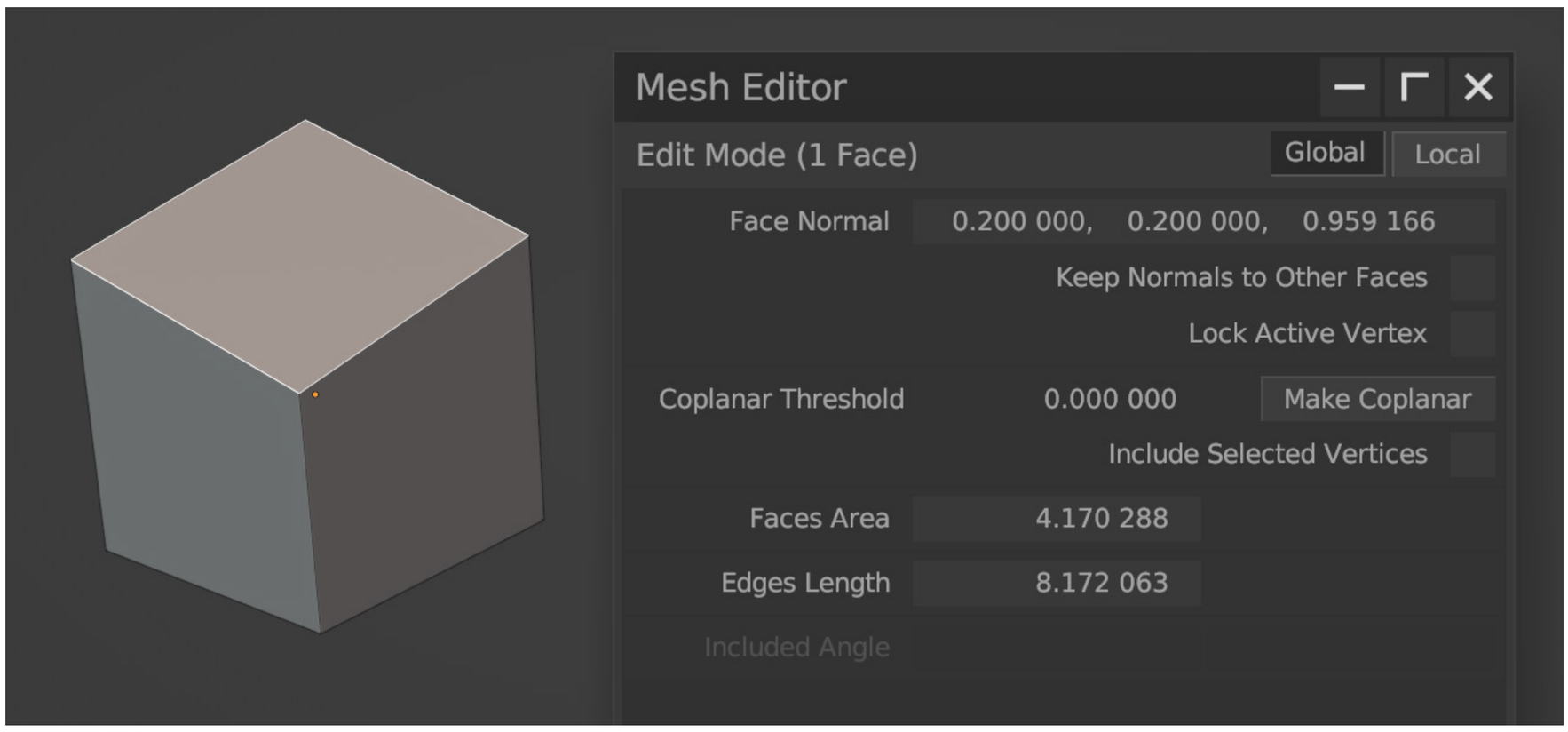
Make Collinear

Make vertices collinear.

Properties: Lock Active Vertex.

Included Angle

If 3 vertices selected, the angle will be based on the second selected vertex. When modifying the angle, the last selected vertex will move and maintain the length from the second vertex.



Face Normal

Unit vector direction of Face Normal.

Properties: Keep Normals to Other Faces, Lock Active Vertex.

Coplanar Threshold

In the coplanar judgment under a specific accuracy, 0 is the most accurate.

Make Coplanar

Make vertices coplanar.

Properties: Include Selected Vertices, Keep Normals to Other Faces, Lock Active Vertex

Faces Area

Area of selected faces.

Edges Length

The total Length of selected edges.

Keep Normals to Other Faces

Keep normals of unselected faces if possible.

Lock Active Vertex

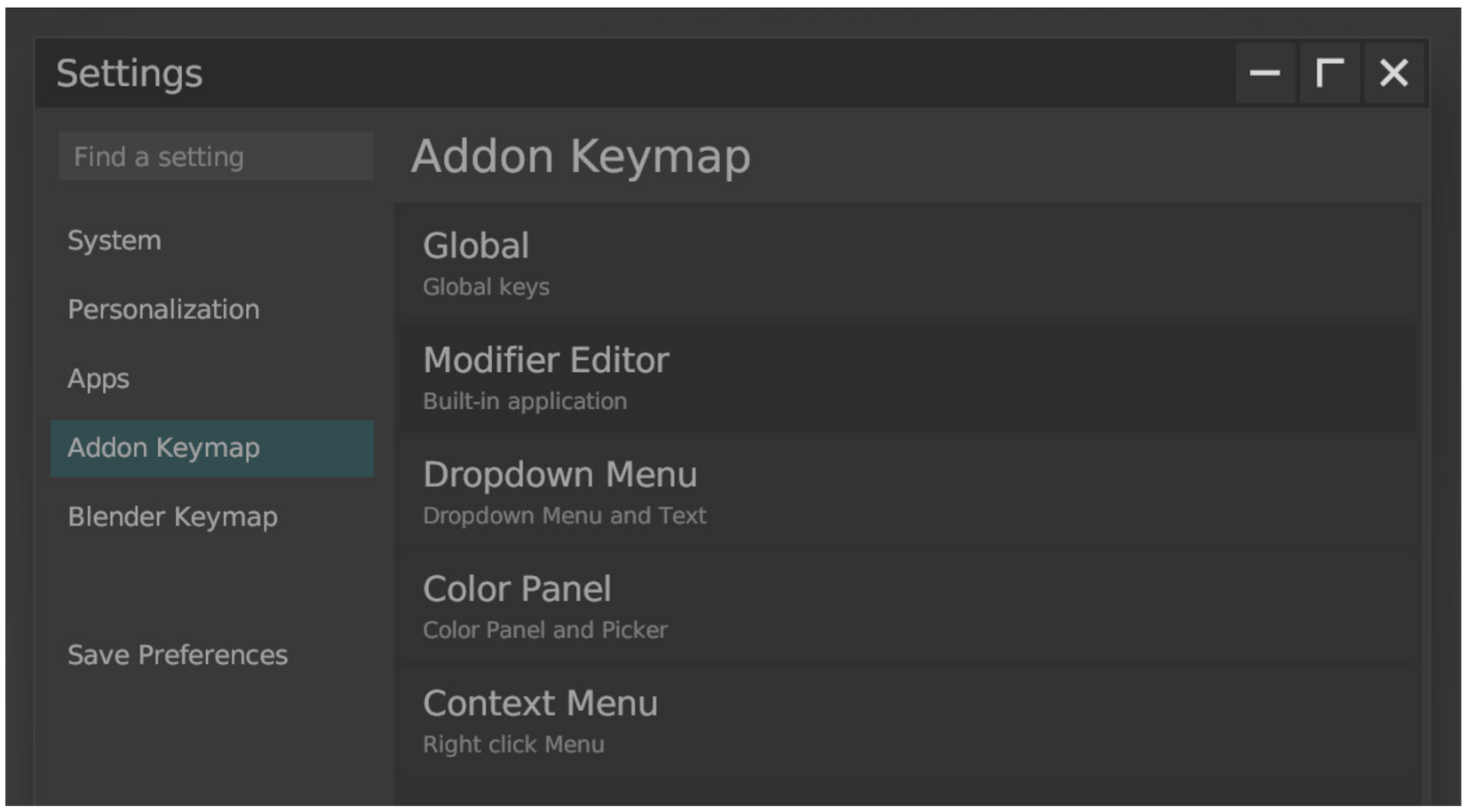
Keep active vertex location.

Include Selected Vertices

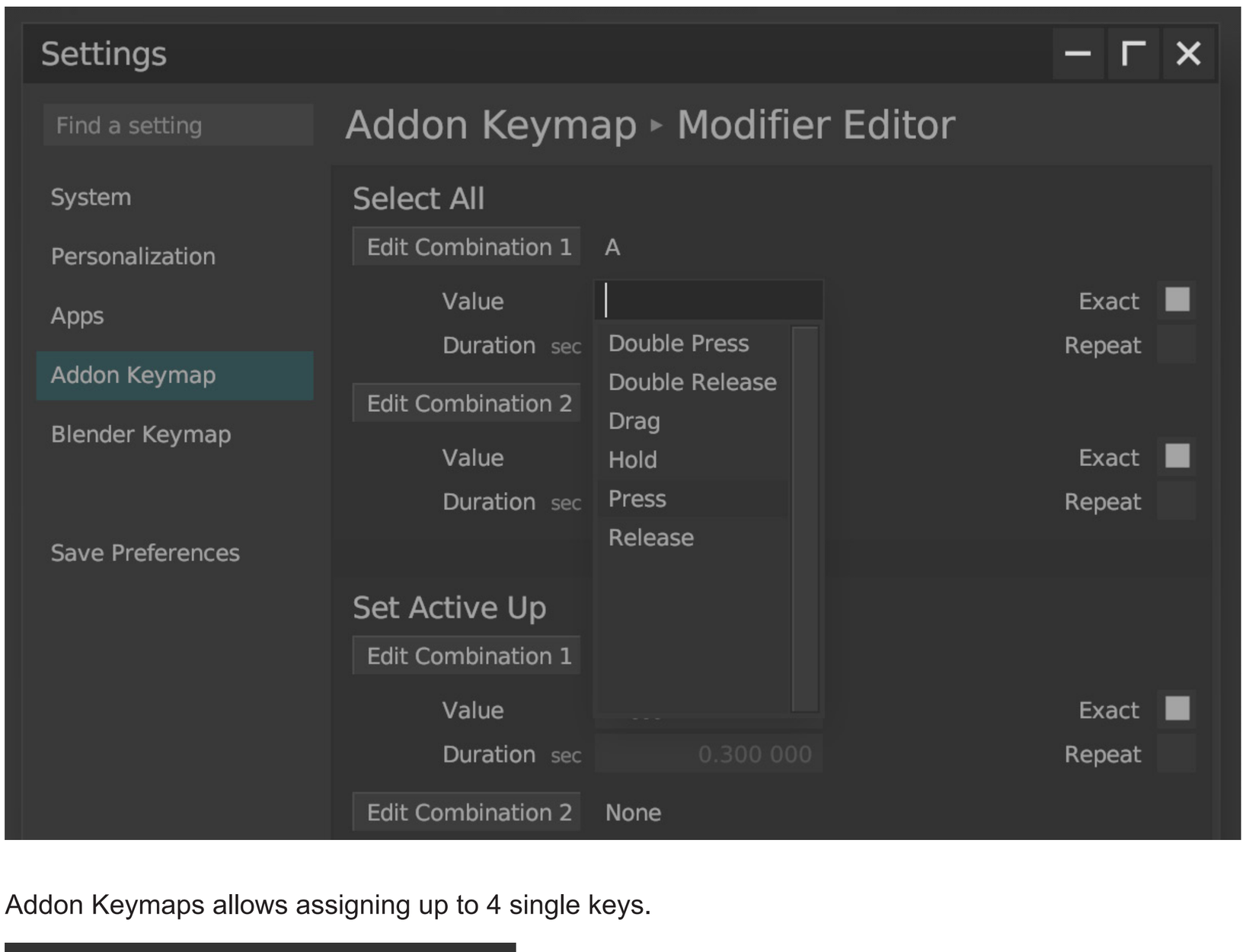
If false, only count selected faces.

KEYMAP

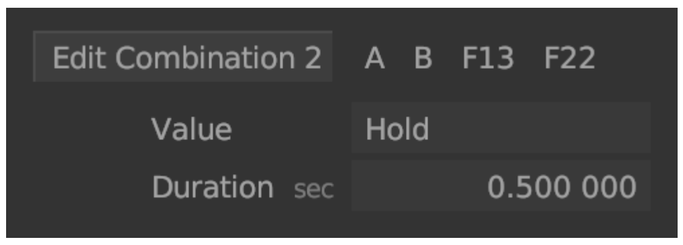
Invoke Settings via N-Panel / Shortcut.



Each Keymap has a Value property to define how to trigger the Operator
Some Keymaps have an End Value property to define how to end the Operator (eg: Pan).



Addon Keymaps allows assigning up to 4 single keys.



Most membrane keyboards do not respond when pressing multiple keys at the same time (Keyboard Ghosting). For complex keystrokes, we recommend using a mechanical keyboard instead.

Value definition

Press – Triggered when a keystroke is pressed

Release – Triggered when a keystroke is released

Double Press – Press the keystroke twice within the timer (Duration), each keymap has a separate duration property

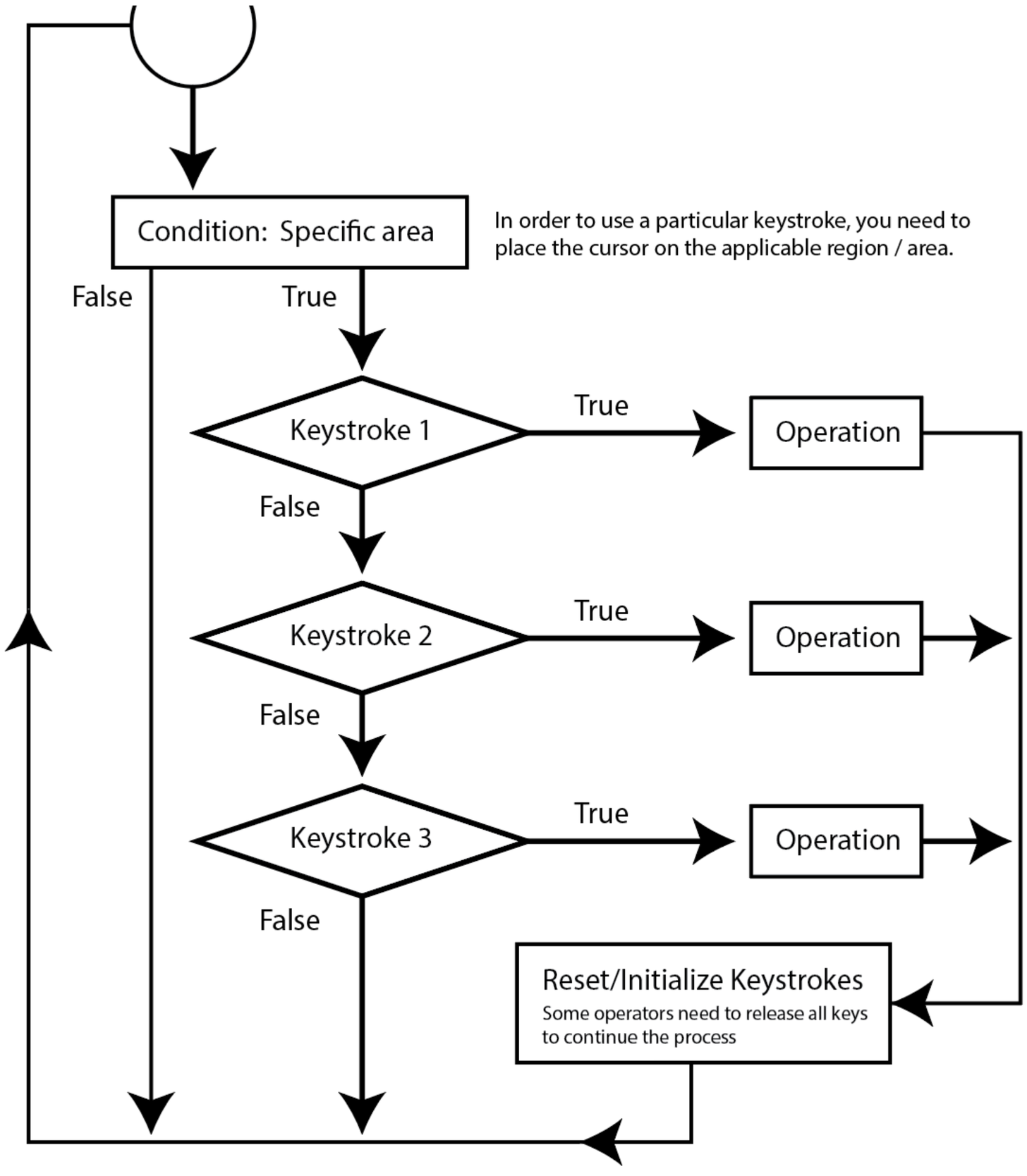
Double Release – Release the keystroke twice within the timer (Duration)

Hold – Hold down the keystroke for a specified time (Duration),

Drag – Threshold exceeded while holding keystroke (Default 3 pixels)

Conflict

In some cases, you need to set some parameters for the key to avoid conflicts (That is, some Operator cannot be executed).



Example A:

Operator / Keystroke 1

Operator / Keystroke 2

Operator / Keystroke 3

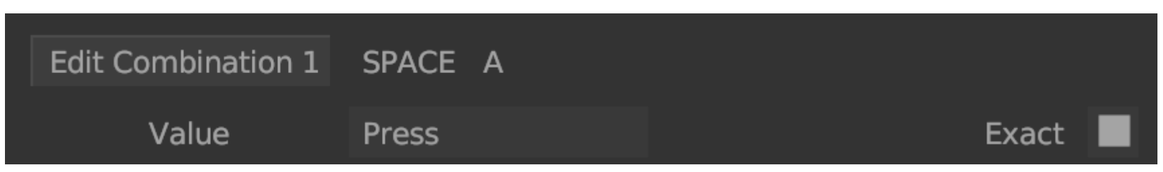
To trigger Operator 2, you need to press “Space” before pressing “A”. If “A” is pressed first, Operator 1 will be triggered instead.

If you set the property (Exact) of Operator 1 to True, it means that Operator 1 will only be triggered when a specific button (In this case “A”) is pressed. That means Operator 1 will not be triggered when more than one button is pressed.

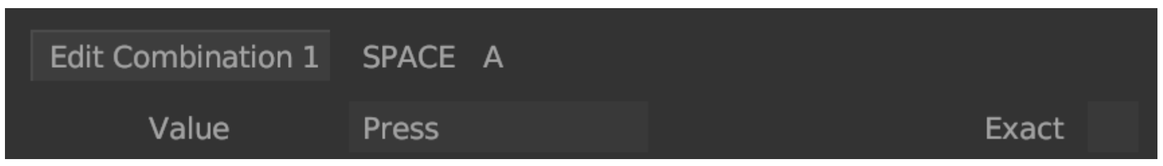
Operator 2 and Operator 3 are regarded as the same key combination, since Operator 2 has a higher priority, Operator 3 will never be executed.

Example B:

Operator / Keystroke 1



Operator / Keystroke 2



Although they have the same keystrokes, Operator 1 Exact is enabled, so you can execute Operator 2 by pressing any key along with “Space” and “A”.

Priority

When there is a key conflict, the Operator with higher priority will be executed.

Mofifier Editor

Priority (Smaller values have a higher priority)	Operator name
1	Select All
2	Set Active Up
3	Set Active Down
4	Set Active Up Extend
5	Set Active Down Extend
6	Modifier Move Up
7	Modifier Move Down
8	Undo
9	Redo
10	Modifier Delete
11	Modifier Apply
12	Pan
13	Sorting
14	Rename
15	Select Extend
16	Select
17	Select Box Extend
18	Select Box

Value Box

1	Batch
2	Quick Edit
3	Button Execute
4	Context Menu
5	Copy
6	Paste
7	Cut (Copy Array)
8	Reset

Modal Quick Edit

Priority (Smaller values have a higher priority)	Operator name
1	Quick Edit Cancel
2	Quick Edit End
3	Quick Edit Slow
4	Quick Edit Fast

Color Panel

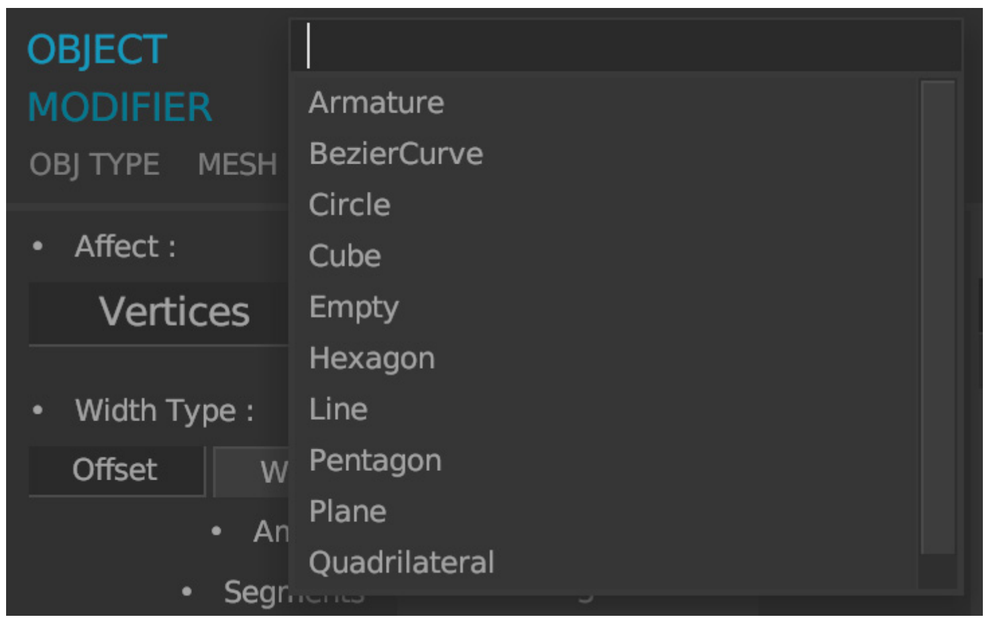
1	Cancel (Drop Down Menu)
2	Confirm (Drop Down Menu)
3	Select (Drop Down Menu)
4	Title Bar Move
5	Hue Select Continue
6	Hue Select

Text Box

1	Cancel (Drop Down Menu)
2	Confirm (Drop Down Menu)
3	Delete All
4	Delete Word
5	Backspace
6	Cursor Select Left
7	Cursor Select Right
8	Cursor Select Up
9	Cursor Select Down
10	Cursor Left
11	Cursor Right
12	Cursor Up
13	Cursor Down
14	Select Box (Drop Down Menu)
15	Pan (Drop Down Menu)
16	Copy
17	Paste
18	Cut
19	Select All (Drop Down Menu)
20	Select (Drop Down Menu)
21	Tab
22	Scroll Up
23	Scroll Down
24	Text Input

BASIC CONTROL

Text Box



1. Cancel.

Default Keymap 1	Cancel (Drop Down Menu)
Keystroke	ESC
Value	Press
End Value	-
Region	-

Default Keymap 2	Cancel (Drop Down Menu)
Keystroke	Right Mouse
Value	Release
End Value	-
Region	-

2. Confirm.

Default Keymap 1	Confirm (Drop Down Menu)
Keystroke	Return
Value	Press
End Value	-
Region	-

Default Keymap 2	Confirm (Drop Down Menu)
Keystroke	Numpad Enter
Value	Press
End Value	-
Region	-

3. Delete all character.

Default Keymap 1	Delete All
Keystroke	Delete
Value	Press
End Value	-
Region	-

4. Delete word from the text cursor.

Default Keymap 1	Delete Word
Keystroke	Left Ctrl, Backspace
Value	Press
End Value	-
Region	-

5. Delete character from the text cursor.

Default Keymap 1	Backspace
Keystroke	Backspace
Value	Press
End Value	-
Region	-

6. Move the text cursor left and select.

Default Keymap 1	Cursor Select Left
Keystroke	Left Shift + Left Arrow
Value	Press
End Value	-
Region	-

7. Move the text cursor right and select.

Default Keymap 1	Cursor Select Right
Keystroke	Left Shift + Right Arrow
Value	Press
End Value	-
Region	-

8. Move the text cursor up and select.

Default Keymap 1	Cursor Select Up
Keystroke	Left Shift + Up Arrow
Value	Press
End Value	-
Region	-

9. Move the text cursor down and select.

Default Keymap 1	Cursor Select Down
Keystroke	Left Shift + Down Arrow
Value	Press
End Value	-
Region	-

10. Move the text cursor left.

Default Keymap 1	Cursor Left
Keystroke	Left Arrow
Value	Press
End Value	-
Region	-

11. Move the text cursor right and select.

Default Keymap 1	Cursor Right
Keystroke	Right Arrow
Value	Press
End Value	-
Region	-

12. Move the text cursor up and select.

Default Keymap 1	Cursor Up
Keystroke	Up Arrow
Value	Press
End Value	-
Region	-

13. Move the text cursor down and select.

Default Keymap 1	Cursor Down
Keystroke	Down Arrow
Value	Press
End Value	-
Region	-

14. Use the selection box to select text.

Default Keymap 1	Select Box (Drop Down Menu)
Keystroke	Left Mouse
Value	Drag
End Value	Release
Region	Text Box

15. Move the Text Box canvas.

Default Keymap 1	Pan (Drop Down Menu)
Keystroke	Middle Mouse
Value	Drag
End Value	Release
Region	Text Box

16. Copy text.

Default Keymap 1	Copy
Keystroke	Left Ctrl + C
Value	Press
End Value	-
Region	-

17. Paste text.

Default Keymap 1	Paste
Keystroke	Left Ctrl + V
Value	Press
End Value	-
Region	-

18. Cut text.

Default Keymap 1	Cut
Keystroke	Left Ctrl + X
Value	Press
End Value	-
Region	-

19. Select all characters.

Default Keymap 1	Select All (Drop Down Menu)
Keystroke	Left Mouse
Value	Double Press
End Value	-
Region	Text Box

Default Keymap 1	Select All (Drop Down Menu)
Keystroke	Left Ctrl + A
Value	Press
End Value	-
Region	Text Box

20. Move the text cursor.

Default Keymap 1	Select (Drop Down Menu)
Keystroke	Left Mouse
Value	Press
End Value	-
Region	Text Box

21. Paste text from the filter.

Default Keymap 1	Tab
Keystroke	Tab
Value	Press
End Value	-
Region	-

22. Move the filter canvas down.

Default Keymap 1	Scroll Up
Keystroke	Wheel Up
Value	Press
End Value	-
Region	-

23. Move the filter canvas up.

Default Keymap 1	Scroll Down
Keystroke	Wheel Down
Value	Press
End Value	-
Region	-

24. Select results in the filter.

Default Keymap 1	Select (Drop Down Menu)
Keystroke	Left Mouse
Value	Press
End Value	-
Region	Filter

Value Box

1. Invoke Batch Menu.

Default Keymap 1	Batch
Keystroke	Left Alt + Left Mouse
Value	Press
End Value	-
Region	Value Box

2. Execute Quick Edit modal.

Default Keymap 1	Quick Edit
Keystroke	Left Mouse
Value	Drag
End Value	Release
Region	Value Box

3. Execute the button function.

Default Keymap 1	Button Execute
Keystroke	Left Mouse
Value	Release
End Value	-
Region	Value Box

4. Open Context Menu.

Default Keymap 1	Context Menu
Keystroke	Right Mouse
Value	Release
End Value	-
Region	Value Box

Default Keymap 2	Context Menu
Keystroke	Application
Value	Press
End Value	-
Region	Value Box

5. Copy text.

Default Keymap 1	Copy
Keystroke	Left Ctrl + C
Value	Press
End Value	-
Region	Value Box

6. Paste text.

Default Keymap 1	Paste
Keystroke	Left Ctrl + V
Value	Press
End Value	-
Region	Value Box

7. Copy Array.

Default Keymap 1	Cut
Keystroke	Left Ctrl + X
Value	Press
End Value	-
Region	Value Box

8. Reset Value.

Default Keymap 1	Reset
Keystroke	Backspace
Value	Press
End Value	-
Region	Value Box

Modal Quick Edit

1. Cancel Quick Edit modal and restore the value.

Default Keymap 1	Quick Edit Cancel
Keystroke	ESC
Value	Press
End Value	-
Region	-

Default Keymap 2	Quick Edit Cancel
Keystroke	Right Mouse
Value	Release
End Value	-
Region	-

2. Decrease the unit in Quick Edit modal while holding the key.

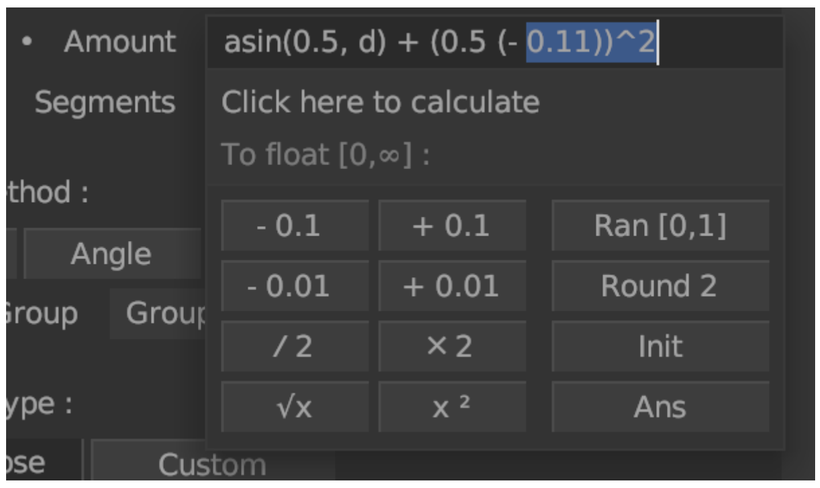
Default Keymap 1	Quick Edit Slow
Keystroke	Left Ctrl
Value	-
End Value	-
Region	-

3. Increase the unit in Quick Edit modal while holding the key.

Default Keymap 1	Quick Edit Fast
Keystroke	Left Shift
Value	-
End Value	-
Region	-

Calculator

When entering value in the Value Box, general expressions and python expressions are supported for calculation. When calculator enable, it allows the user to customize button functionality.



When Output is a complex number, it will be converted to an absolute value.

Example 1:

Input	`1+i`
Output	`1+i`
Value	`1.414213562`

Example 2:

Input	`floor(pi^2-e)!`
Output	`5040`
Value	`5040`

To enter a Python expression, you need to insert a semicolon before the expression.

Example 3:

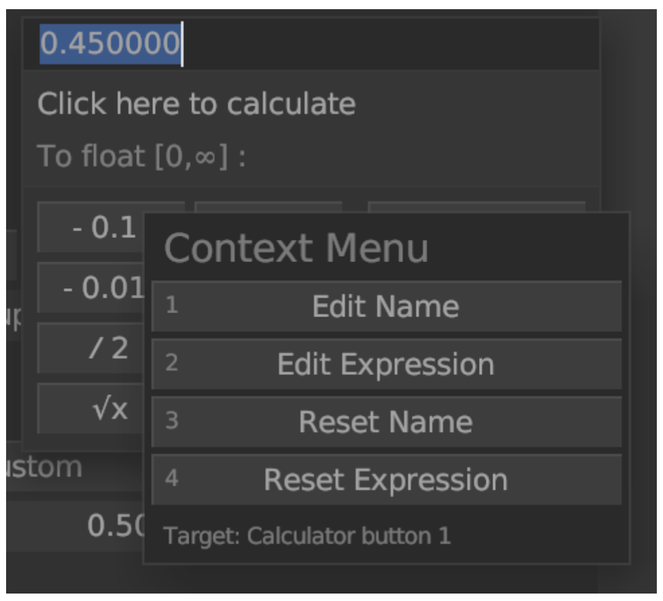
Input	`;abs(1j**2)`
Output	`1`
Value	`1`

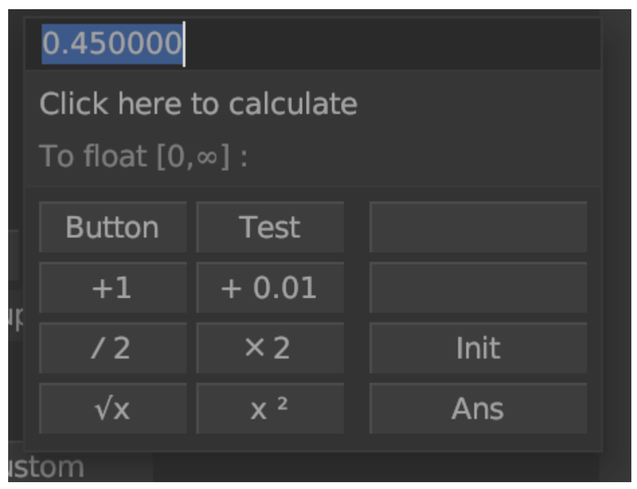
To add a driver, you need to insert a hashtag before the expression.

Example 4:

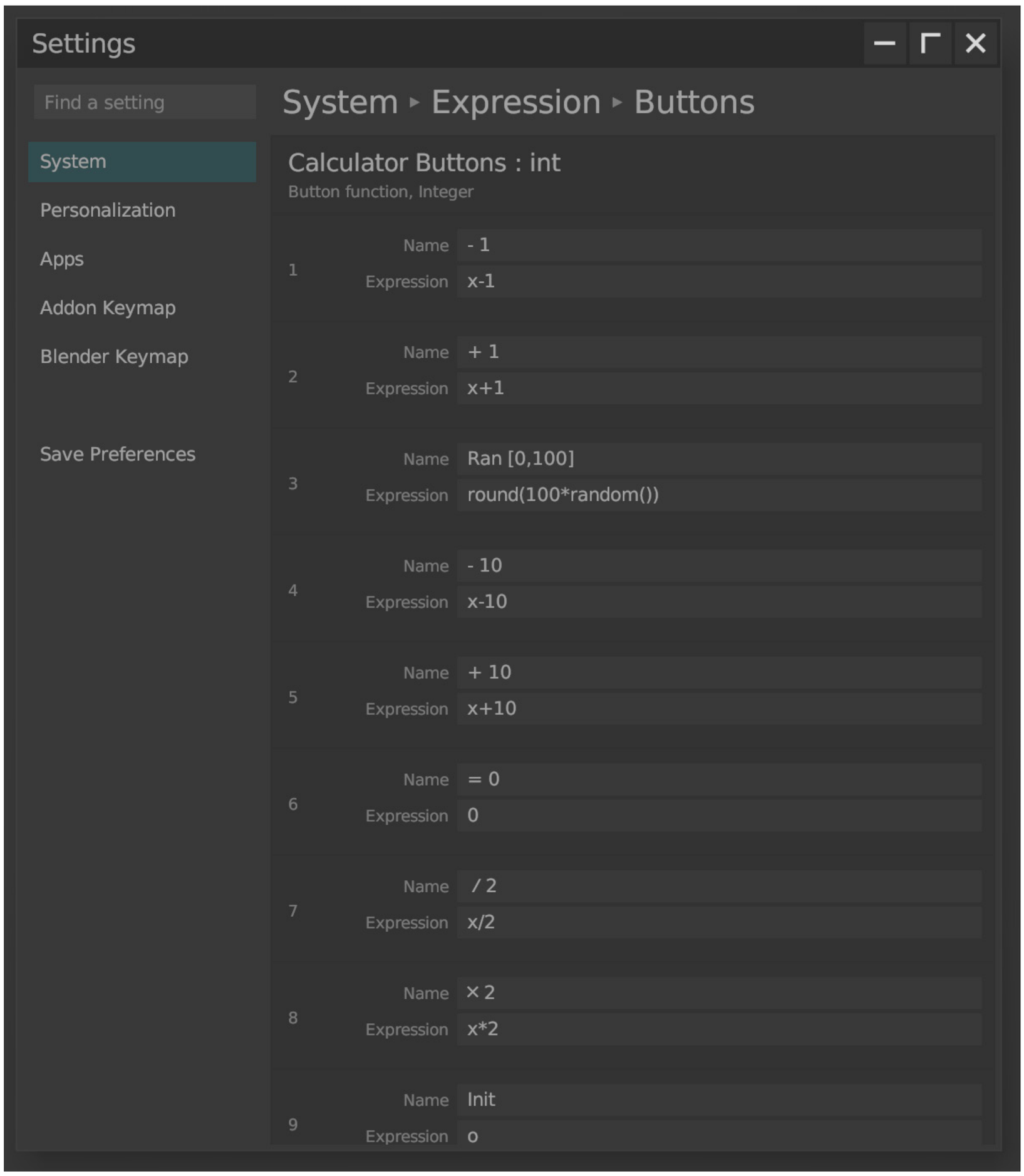
Input	`#1 if frame == 1 else 2`

Invoke context menu to edit calculator button names and expressions.





It can also be edited from Settings.



Function List (General Expression)

Constants

`i`

Imaginary unit

`j`

Same as `i`

`e`

Euler's number, the base of natural logarithms

`π`

The ratio of the circumference of a circle to its diameter

`pi`

Same as `π`

`tau`

`2π`

`^`

Power

`!`

Factorial

`%`

÷100

`x`

Current value

`o`

Original value

Constants (Length Unit, Ignore lowercase/uppercase)

`km`
`kilometer`
`kilometers`

Kilometers to current unit

`m`
`meter`
`meters`

Meters to current unit

`cm`
`centimeter`
`centimeters`

Centimeters to current unit

mm
millimeter
millimeters

Millimeters to current unit

um
μ
mμ
micrometer
micrometers

Micrometers to current unit

mi
mile
miles

Miles to current unit

ft
feet
foot

Feet to current unit

in
inche
inches

Inches to current unit

mil
thou

Thou to current unit

Example

Scene Length unit: Inches

Scene Unit Scale: 1.5

```
Input:      2 + 4 mm + 6 ft
Output:     74.15748
Attribute value stored in Python: 74.15748 * 0.0254 / 1.5 = 1.2557333
```

Functions

seed()

Initialize the random number generator.

getstate()

Return an object capturing the current internal state of the generator. This object can be passed to setstate() to restore the state.

setstate() `var 1: state`

state should have been obtained from a previous call to getstate(), and setstate() restores the internal state of the generator to what it was at the time getstate() was called.

randbytes() `var 1 (n): positive integer`

Generate n random bytes.

```
Input:      int(randbytes(5).hex(), 16)
Output:     621644248778
```

randrange() `var 1 (stop): integer`

Return a randomly selected element from range(0, stop)

```
Input:      randrange(6)
Output:     5
```

randrange()

`var 1 (start): integer` `var 2 (stop): integer` `var 3 (step = 1, Optional): integer`

Return a randomly selected element from range(start, stop, step)

```
Input:      randrange(3, 6, 2)
Output:     3
```

randint()

`var 1 (a): integer` `var 2 (b): integer`

Return a random integer N such that a <= N <= b. Alias for randrange(a, b+1)

```
Input:      randint(3, 5)
Output:     5
```

getrandbits()

`var 1 (k): nonnegaive integer`

Returns a non-negative Python integer with k random bits. This method is supplied with the MersenneTwister generator and some other generators may also provide it as an optional part of the API. When available, getrandbits() enables randrange() to handle arbitrarily large ranges.

```
Input:      getrandbits(5)
Output:     30
```

choice()

```
var 1 (seq): real number
```

Return a random element from the non-empty sequence seq.

```
Input:      choice((2, 3, 4))
Output:     2
```

choices()

```
var 1 (population): seq                  var 2 (k = 1, Optional): positive integer
var 3 (weights, Optional): seq           var 4 (cum_weights, Optional): seq
```

Return a k sized list of elements chosen from the population with replacement. If a weights sequence is specified, selections are made according to the relative weights. Alternatively, if a cum_weights sequence is given, the selections are made according to the cumulative weights. For example, the relative weights [10, 5, 30, 5] are equivalent to the cumulative weights [10, 15, 45, 50]. Internally, the relative weights are converted to cumulative weights before making selections.

```
Input:      sum(choices((1, 2, 3, 4), 1000)) / 1000
Output:     2.506

Input:      sum(choices((1, 2, 3, 4), 1000, None, (1, 1, 1, 1))) / 1000
Output:     1
```

shuffle()

```
var 1 (x): seq
```

Shuffle the sequence x in place.

```
Input:      shuffle((1, 2, 3, 4))[0]
Output:     2
```

sample()

```
var 1 (population): seq                  var 2 (k): positive integer
var 3 (counts, Optional): seq
```

Return a k length list of unique elements chosen from the population sequence. Used for random sampling without replacement.

Returns a new list containing elements from the population while leaving the original population unchanged. The resulting list is in selection order so that all sub-slices will also be valid random samples. This allows raffle winners (the sample) to be partitioned into grand prize and second place winners (the subslices).

Members of the population need not be hashable or unique. If the population contains repeats, then each occurrence is a possible selection in the sample.

Repeated elements can be specified one at a time or with the optional keyword-only counts parameter. For example, sample([‘red’, ‘blue’], counts=[4, 2], k=5) is equivalent to sample([‘red’, ‘red’, ‘red’, ‘red’, ‘blue’, ‘blue’], k=5)

```
Input:      sum(sample((1, 1, 2, 2, 3, 4), 4))
Output:     9

Input:      sum(sample((1, 2, 3, 4), 4, (2, 2, 1, 1)))
Output:     8
```

random()

Return the next random floating point number in the range [0.0, 1.0)

```
Input:      random()
Output:     0.8070585759119
```

uniform()

`var 1 (a): real number` `var 2 (b): real number`

Return a random floating point number N such that a <= N <= b for a <= b and b <= N <= a for b < a.
The end-point value b may or may not be included in the range depending on floating-point rounding in the equation a + (b-a) * random()

```
Input:      uniform(-2.3, 7.2)
Output:     -0.7599512525748
```

triangular()

`var 1 (low): real number` `var 2 (high): real number`
`var 3 (mode): real number`

Return a random floating point number N such that low <= N <= high and with the specified mode between those bounds. The low and high bounds default to zero and one. The mode argument defaults to the midpoint between the bounds, giving a symmetric distribution

```
Input:      triangular(-2.1, 5.6, 3.1)
Output:     4.650596214649
```

betavariate()

`var 1 (alpha): real number` `var 2 (beta): real number`

Beta distribution. Conditions on the parameters are alpha > 0 and beta > 0. Returned values range between 0 and 1

```
Input:      betavariate(2.1, 2.2)
Output:     0.5409938021106
```

expovariate()

`var 1 (lambd): real number`

Exponential distribution. lambd is 1.0 divided by the desired mean. It should be nonzero. (The parameter would be called “lambda”, but that is a reserved word in Python.) Returned values range from 0 to positive infinity if lambd is positive, and from negative infinity to 0 if lambd is negative

```
Input:      expovariate(2)
Output:     0.029974233415711
```

gammavariate()

`var 1 (alpha): real number` `var 2 (beta): real number`

Gamma distribution. (Not the gamma function!) Conditions on the parameters are alpha > 0 and beta > 0

```
Input:      gammavariate(2.1, 2.2)
Output:     9.419232015484
```

gauss()

`var 1 (mu): real number` `var 2 (sigma): real number`

Normal distribution, also called the Gaussian distribution. mu is the mean, and sigma is the standard deviation. This is slightly faster than the normalvariate() function defined below.

Multithreading note: When two threads call this function simultaneously, it is possible that they will receive the same return value. This can be avoided in three ways. 1) Have each thread use a different instance of the random number generator. 2) Put locks around all calls. 3) Use the slower, but thread-safe normalvariate() function instead

```
Input:      gauss(0, 1)
Output:     2.3667486814625
```

lognormvariate()

```
var 1 (mu): real number                    var 2 (sigma): real number
```

Log normal distribution. If you take the natural logarithm of this distribution, you'll get a normal distribution with mean mu and standard deviation sigma. mu can have any value, and sigma must be greater than zero

```
Input:      lognormvariate(0, 1)
Output:     1.615633099343
```

normalvariate()

```
var 1 (mu): real number                    var 2 (sigma): real number
```

Normal distribution. mu is the mean, and sigma is the standard deviation

```
Input:      normalvariate(0, 1)
Output:     1.87181748392
```

vonmisesvariate()

```
var 1 (mu): real number                    var 2 (kappa): real number
```

mu is the mean angle, expressed in radians between 0 and 2*pi, and kappa is the concentration parameter, which must be greater than or equal to zero. If kappa is equal to zero, this distribution reduces to a uniform random angle over the range 0 to 2*pi

```
Input:      vonmisesvariate(0, 1)
Output:     0.1528172805248
```

paretovariate()

```
var 1 (alpha): real number
```

Pareto distribution. alpha is the shape parameter

```
Input:      paretovariate(2.1)
Output:     1.9917223270650
```

weibullvariate()

```
var 1 (alpha): real number                 var 2 (beta): real number
```

Weibull distribution. alpha is the scale parameter and beta is the shape parameter

```
Input:      weibullvariate(2.1, 2.2)
Output:     4.055761225935
```

phase()

`var 1 (x): complex / real number`

Return the phase of x

```
Input:      phase(1 + i)
Output:     0.785398163397
```

polar()

`var 1 (x): complex / real number`

Return the representation of x in polar coordinates. Returns a pair (r, phi) where r is the modulus of x and phi is the phase of x. polar(x) is equivalent to (abs(x), phase(x))

```
Input:      polar(1 + i)[1]
Output:     0.785398163397
```

rect()

`var 1 (r): real number` `var 2 (θ): real number`

Return the complex number x with polar coordinates r and θ. Equivalent to r (cos θ + i sin θ)

```
Input:      rect(2, 5)
Output:     0.5673243709265 - 1.917848549326 i
```

exp()

`var 1 (x): complex / real number`

Return e raised to the power x, where e is the base of natural logarithms

```
Input:      exp(i*pi)
Output:     -1
```

log()

`var 1: complex / real number` `var 2 (base, Optional): complex / real number`

Logarithm in base 10. There is one branch cut, from 0 along the negative real axis to -∞, continuous from above.

```
Input:      log(10)
Output:     1

Input:      log(8, 2)
Output:     3
```

log10()

`var 1: complex / real number` `var 2 (base, Optional): complex / real number`

Same as log()

log2()

`var 1: complex / real number` `var 2 (base, Optional): complex / real number`

Logarithm in base 2

```
Input:      log2(2)
Output:     1
```

ln()

`var 1: complex / real number` `var 2 (base, Optional): complex / real number`

Natural logarithm

```
Input:      ln(e)
Output:     1
```

sqrt()

`var 1: complex / real number` `var 2 (Optional): complex / real number`

Square root

```
Input:      sqrt(4)
Output:     2

Input:      sqrt(8, 3)
Output:     2
```

rt()

same as `sqrt()`

acos()

`var 1: complex / real number` `var 2 (angle unit, Optional): d`

Return the arc cosine of x. There are two branch cuts: One extends right from 1 along the real axis to ∞, continuous from below. The other extends left from -1 along the real axis to -∞, continuous from above

```
Input:      acos(rt(2)/2)
Output:     0.7853981633974

Input:      acos(rt(2)/2, d)
Output:     45
```

asin()

`var 1: complex / real number` `var 2 (angle unit, Optional): d`

Return the arc sine of x. This has the same branch cuts as acos()

```
Input:      asin(rt(2)/2)
Output:     0.7853981633974

Input:      asin(rt(2)/2, d)
Output:     45
```

atan()

`var 1: complex / real number` `var 2 (angle unit, Optional): d`

Return the arc tangent of x. There are two branch cuts: One extends from 1i along the imaginary axis to ∞ i, continuous from the right. The other extends from -1i along the imaginary axis to - ∞ i, continuous from the left

```
Input:      atan(1)
Output:     0.7853981633974

Input:      atan(1, d)
Output:     45
```

asec()

`var 1: complex / real number` `var 2 (angle unit, Optional): d`

Return the arc secant of x

```
Input:      asec(2)
Output:     1.0471975511966

Input:      asec(2, d)
Output:     60
```

acsc()

var 1: complex / real number var 2 (angle unit, Optional): d

Return the arc cosecant of x

```
Input:      acsc(2)
Output:     0.5235987755983

Input:      acsc(2, d)
Output:     30
```

acot()

var 1: complex / real number var 2 (angle unit, Optional): d

Return the arc cotangent of x

```
Input:      acot(2)
Output:     0.4636476090008

Input:      acot(2, d)
Output:     26.565051177078
```

cos()

var 1: complex / real number var 2 (angle unit, Optional): d

Return the cosine of x

```
Input:      cos(pi)
Output:     -1

Input:      cos(180, d)
Output:     -1
```

sin()

var 1: complex / real number var 2 (angle unit, Optional): d

Return the sine of x

```
Input:      sin(pi)
Output:     0

Input:      sin(180, d)
Output:     0
```

tan()

var 1: complex / real number var 2 (angle unit, Optional): d

Return the tangent of x

```
Input:      tan(pi/4)
Output:     1

Input:      tan(45, d)
Output:     1
```

sec()

var 1: complex / real number var 2 (angle unit, Optional): d

Return the secant of x

```
Input:      sec(pi/4)
Output:     1.414213562373

Input:      sec(45, d)
Output:     1.414213562373
```

csc()

`var 1: complex / real number` `var 2 (angle unit, Optional): d`

Return the cosecant of x

```
Input:      csc(pi/3)
Output:     1.1547005383793

Input:      csc(60, d)
Output:     1.1547005383793
```

cot()

`var 1: complex / real number` `var 2 (angle unit, Optional): d`

Return the cotangent of x

```
Input:      cot(pi/3)
Output:     0.5773502691896

Input:      cot(60, d)
Output:     0.5773502691896
```

acosh()

`var 1: complex / real number`

Return the inverse hyperbolic cosine of x. There is one branch cut, extending left from 1 along the real axis to - ∞, continuous from above

```
Input:      acosh(2)
Output:     1.3169578969248
```

asinh()

`var 1: complex / real number`

Return the inverse hyperbolic sine of x. There are two branch cuts: One extends from 1i along the imaginary axis to ∞ i, continuous from the right. The other extends from -1i along the imaginary axis to - ∞ i, continuous from the left

```
Input:      asinh(2)
Output:     1.4436354751788
```

atanh()

`var 1: complex / real number`

Return the inverse hyperbolic tangent of x. There are two branch cuts: One extends from 1 along the real axis to ∞, continuous from below. The other extends from -1 along the real axis to - ∞, continuous from above

```
Input:      atanh(0.5)
Output:     0.5493061443341
```

asech()

`var 1: complex / real number`

Return the inverse hyperbolic secant of x

```
Input:      asech(0.5)
Output:     1.3169578969248
```

acsch()

`var 1: complex / real number`

Return the inverse hyperbolic cosecant of x

```
Input:      acsch(0.5)
Output:     1.4436354751788
```

acoth()

`var 1: complex / real number`

Return the inverse hyperbolic cotangent of x

```
Input:      acoth(2)
Output:     0.54930614433405
```

cosh()

`var 1: complex / real number`

Return the hyperbolic cosine of x

```
Input:      cosh(pi)
Output:     11.5919532755215
```

sinh()

`var 1: complex / real number`

Return the hyperbolic sine of x

```
Input:      sinh(pi)
Output:     11.5487393572577
```

tanh()

`var 1: complex / real number`

Return the hyperbolic tangent of x

```
Input:      tanh(pi)
Output:     0.99627207622
```

sech()

`var 1: complex / real number`

Return the hyperbolic secant of x

```
Input:      sech(pi)
Output:     0.08626673833405
```

csch()

`var 1: complex / real number`

Return the hyperbolic cosecant of x

```
Input:      csch(pi)
Output:     0.08658953753005
```

coth()

`var 1: complex / real number`

Return the hyperbolic cotangent of x

```
Input:      coth(pi)
Output:     1.0037418731973
```

isfinite()

`var 1 (x): complex / real number`

Return True if both the real and imaginary parts of x are finite, and False otherwise.

```
Input:      int(isfinite(inf))
Output:     0
```

isinf()

```
var 1 (x): complex / real number
```

Return True if either the real or the imaginary part of x is an infinity, and False otherwise.

```
Input:      int(isinf(inf))
Output:     1
```

isnan()

```
var 1 (x): complex / real number
```

Return True if either the real or the imaginary part of x is a NaN, and False otherwise.

```
Input:      int(isnan(nan))
Output:     1
```

isclose()

```
var 1 (a): complex / real number          var 2 (b): complex / real number
var 3 (rel_tol = 10**-9, Optional): real number
var 4 (abs_tol = 0, Optional): real number
```

Return True if the values a and b are close to each other and False otherwise.

Whether or not two values are considered close is determined according to given absolute and relative tolerances.

rel_tol is the relative tolerance – it is the maximum allowed difference between a and b, relative to the larger absolute value of a or b. For example, to set a tolerance of 5%, pass rel_tol=0.05. The default tolerance is 1e-09, which assures that the two values are the same within about 9 decimal digits. rel_tol must be greater than zero.

abs_tol is the minimum absolute tolerance – useful for comparisons near zero. abs_tol must be at least zero.

If no errors occur, the result will be: abs(a-b) <= max(rel_tol * max(abs(a), abs(b)), abs_tol).

The IEEE 754 special values of NaN, inf, and -inf will be handled according to IEEE rules. Specifically, NaN is not considered close to any other value, including NaN. inf and -inf are only considered close to themselves.

```
Input:      int(isclose(1, 1 + 10^-10))
Output:     1
```

Re()

```
var 1: complex / real number
```

Return the real part of a complex number. Same as z.real

```
Input:      Re(1 + i)
Output:     1
```

Im()

```
var 1: complex / real number
```

Return the imaginary part of a complex number. Same as z.imag

```
Input:      Im(1 + i)
Output:     i
```

conj()

```
var 1: complex / real number
```

Return the complex conjugate

```
Input:      conj(1 + i)
Output:     1 - i
```

ceil()

`var 1: real`

Return the ceiling of x, the smallest integer greater than or equal to x

```
Input:      ceil(8.1)
Output:     9
```

comb()

`var 1: nonnegative integer` `var 2: nonnegative integer`

Combination

```
Input:      comb(5, 2)
Output:     10
```

C()

same as `comb()`

copysign()

`var 1 (x): real number` `var 2 (y): real number`

Return a float with the magnitude (absolute value) of x but the sign of y.

```
Input:      copysign(2, -1)
Output:     -2
```

fabs()

`var 1: real number`

Absolute value, Python version of the math module

```
Input:      fabs(-1)
Output:     1
```

abs()

`var 1: complex / real number`

Absolute value

```
Input:      abs(1 + i)
Output:     1.414213562373
```

factorial()

`var 1 (n): nonnegative integer`

Return n factorial as an integer.

```
Input:      factorial(5)
Output:     120
```

floor()

`var 1: real`

Return the floor of x, the largest integer less than or equal to x

```
Input:      floor(9.9)
Output:     9
```

fmod()

`var 1: real number` `var 2: real number`

Return fmod(x, y), as defined by the platform C library. Note that the Python expression x % y may not return the same result. The intent of the C standard is that fmod(x, y) be exactly (mathematically; to infinite precision) equal to x - n*y for some integer n such that the result has the same sign as x and magnitude less than abs(y)

```
Input:      fmod(5, 3)
Output:     2
```

frexp()

`var 1 (x): real number`

Return the mantissa and exponent of x as the pair (m, e). m is a float and e is an integer such that x == m * 2**e exactly. If x is zero, returns (0.0, 0), otherwise 0.5 <= abs(m) < 1. This is used to “pick apart” the internal representation of a float in a portable way

```
Input:      frexp(0.0625)[0]
Output:     0.5
```

fsum()

`var 1 (seq): real number`

Return an accurate floating point sum of values in the iterable. Avoids loss of precision by tracking multiple intermediate partial sums

```
Input:      fsum((1, 0.1, 0.01))
Output:     1.11
```

sum()

`var 1,2,...,n: complex / real number`

Sum of value.

```
Input:      sum(1, 0.1, 0.01)
Output:     1.11
```

sum()

`var 1 (seq): complex / real number`

Sum of value.

```
Input:      sum((1, 0.1, 0.01))
Output:     1.11
```

gcd()

`var 1,2,...,n: nonnegative integer`

Greatest common divisor

```
Input:      gcd(6, 12, 18)
Output:     6
```

isqrt()

`var 1: nonnegative integer`

Return the integer square root of the nonnegative integer n. This is the floor of the exact square root of n, or equivalently the greatest integer a such that $a^2 \leq n$

```
Input:      isqrt(65)
Output:     8
```

lcm()

`var 1,2,...,n: nonnegative integer`

Least common multiple

```
Input:      lcm(6, 12, 18)
Output:     36
```

ldexp()

`var 1 (x): real number` `var 2 (y): integer`

Return x * (2**y). This is essentially the inverse of function frexp()

```
Input:      ldexp(0.5, -3)
Output:     0.0625
```

modf()

`var 1 (x): real number`

Return the fractional and integer parts of x. Both results carry the sign of x and are floats.

```
Input:      modf(5.2)[0]
Output:     0.2
```

nextafter()

`var 1 (x): real number` `var 2 (y): real number`

Return the next floating-point value after x towards y
If x is equal to y, return y

```
Input:      nextafter(5, 1)
Output:     4.999999999999
```

perm()

`var 1: nonnegative integer` `var 2: nonnegative integer`

Permutation

```
Input:      perm(5, 2)
Output:     20
```

P()

same as `perm()`

prod()

`var 1 (seq): real number` `var 2 (start = 1, Optional): real number`

Calculate the product of all the elements in the input iterable. The default start value for the product is 1.

When the iterable is empty, return the start value. This function is intended specifically for use with numeric values and may reject non-numeric types

```
Input:      prod((4,5,6))
Output:     120
```

prod()

`var 1,2,..,n: real number`

Calculate the product of the inputs.

```
Input:      prod(4,5,6)
Output:     120
```

remainder()

`var 1 (x): real number` `var 2 (y): real number`

Return the IEEE 754-style remainder of x with respect to y. For finite x and finite nonzero y, this is the difference x - n*y, where n is the closest integer to the exact value of the quotient x / y. If x / y is exactly halfway between two consecutive integers, the nearest even integer is used for n. The remainder r = remainder(x, y) thus always satisfies abs(r) <= 0.5 * abs(y)

Special cases follow IEEE 754: in particular, remainder(x, math.inf) is x for any finite x, and remainder(x, 0) and remainder(math.inf, x) raise ValueError for any non-NaN x. If the result of the remainder operation is zero, that zero will have the same sign as x

```
Input:      remainder(5, -3)
Output:     -1
```

trunc()

`var 1: real number`

Return x with the fractional part removed, leaving the integer part. This rounds toward 0: trunc() is equivalent to floor() for positive x, and equivalent to ceil() for negative x. If x is not a float, delegates to x.__trunc__, which should return an Integral value

```
Input:      trunc(pi)
Output:     3
```

ulp()

`var 1: real number`

Return the value of the least significant bit of the float x:

If x is a NaN (not a number), return x.

If x is negative, return ulp(-x).

If x is a positive infinity, return x.

If x is equal to zero, return the smallest positive denormalized representable float (smaller than the minimum positive normalized float, sys.float_info.min).

If x is equal to the largest positive representable float, return the value of the least significant bit of x, such that the first float smaller than x is x - ulp(x).

Otherwise (x is a positive finite number), return the value of the least significant bit of x, such that the first float bigger than x is x + ulp(x).

ULP stands for “Unit in the Last Place”

```
Input:      ulp(10^12)
Output:     0.0001220703
```

cbrt()

`var 1 (x): real number`

Return the cube root of x

```
Input:      cbrt(8)
Output:     2
```

exp2()

`var 1 (x): real number`

Return 2 raised to the power x

```
Input:      exp2(5)
Output:     32
```

expm1()

`var 1: real number`

Return e raised to the power x, minus 1. Here e is the base of natural logarithms. For small floats x, the subtraction in exp(x) - 1 can result in a significant loss of precision; the expm1() function provides a way to compute this quantity to full precision

```
Input:      expm1(3)
Output:     19.085536923188
```

log1p()

`var 1: real number`

Return the natural logarithm of 1+x (base e). The result is calculated in a way which is accurate for x near zero

```
Input:      log1p(e-1)
Output:     1
```

atan2()

`var 1 (y): real number` `var 2 (x): real number`

Return atan(y / x), in radians. The result is between -pi and pi. The vector in the plane from the origin to point (x, y) makes this angle with the positive X axis. The point of atan2() is that the signs of both inputs are known to it, so it can compute the correct quadrant for the angle. For example, atan(1) and atan2(1, 1) are both pi/4, but atan2(-1, -1) is -3*pi/4

```
Input:      atan2(-1, -1)
Output:     -2.356194490192
```

dist()

`var 1: coordinate` `var 2: coordinate`

Return the Euclidean distance between two points p and q, each given as a sequence (or iterable) of coordinates. The two points must have the same dimension

```
Input:      dist((5,0,0), (8,0,0))
Output:     3
```

hypot()

`var 1,2,...,n: real number`

Return the Euclidean norm, sqrt(sum(x**2 for x in coordinates)). This is the length of the vector from the origin to the point given by the coordinates.

For a two dimensional point (x, y), this is equivalent to computing the hypotenuse of a right triangle using the Pythagorean theorem, sqrt(x*x + y*y).

```
Input:      hypot(5, 6)
Output:     7.810249675907
```

degrees()

`var 1: real`

Convert angle x from radians to degrees

```
Input:      degrees(pi)
Output:     180
```

radians()

`var 1: real`

Convert angle x from degrees to radians

```
Input:      radians(180)
Output:     3.1415926535898
```

erf()

`var 1: real number`

Return the error function at x

```
Input:      erf(2)
Output:     0.995322265019
```

erfc()

`var 1: real number`

Return the complementary error function at x. The complementary error function is defined as 1.0 - erf(x). It is used for large values of x where a subtraction from one would cause a loss of significance

```
Input:      erfc(2)
Output:     0.004677734981047
```

gamma()

`var 1: real number`

Return the Gamma function at x

```
Input:      gamma(2.2)
Output:     1.1018024908797
```

lgamma()

`var 1: real number`

Return the natural logarithm of the absolute value of the Gamma function at x

```
Input:      lgamma(2.2)
Output:     0.09694746679064
```

round()

`var 1: real number` `var 2 (places, Optional): integer`

Returns a number that is a rounded version of the specified number, with the specified number of decimals

```
Input:      round(5.5)
Output:     6

Input:      round(14.5, -1)
Output:     10
```

pow()

`var 1 (base): complex / real number` `var 2 (power): complex / real number`

Power

```
Input:      pow(2, 3)
Output:     8
```

min()

`var 1,2,...,n: real number`

Return the smallest item

```
Input:      min(1, 2, 3)
Output:     1
```

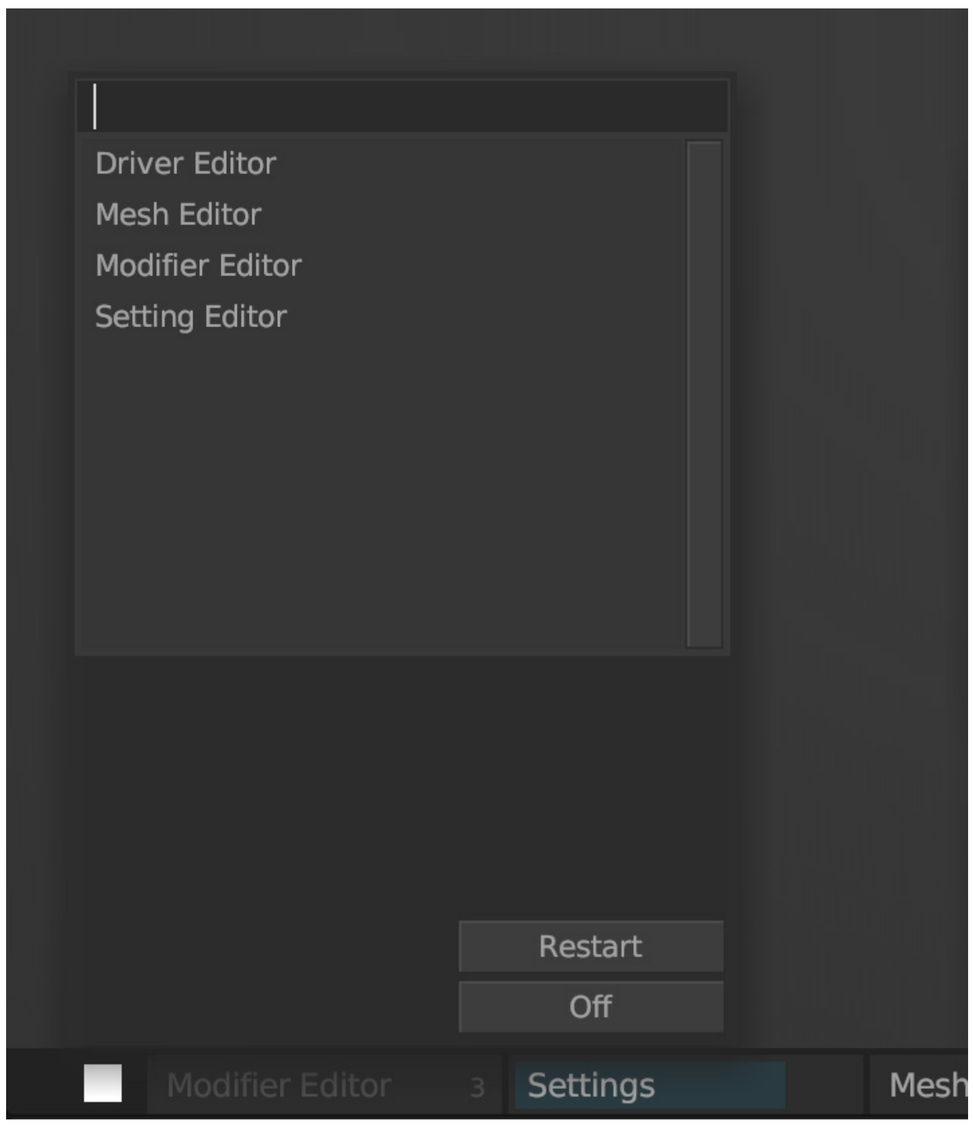
max()

`var 1,2,...,n: real number`

Return the largest item

```
Input:      max(1, 2, 3)
Output:     3
```

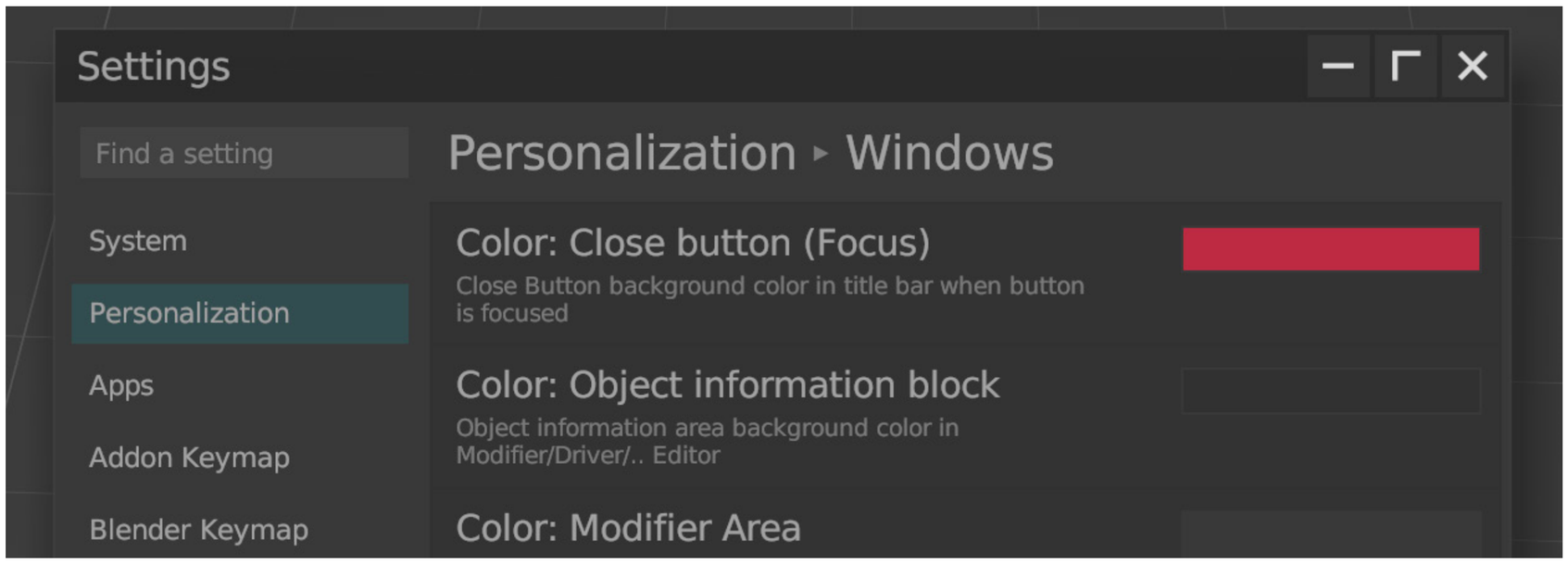
TASK BAR



When no tasks are running, the subsystem will automatically close. You can disable this setting in Settings.

THEME AND COLOR

The color of the interface in N-panel will not be displayed correctly, please use Settings Editor instead.



ABOUT

Bug Report

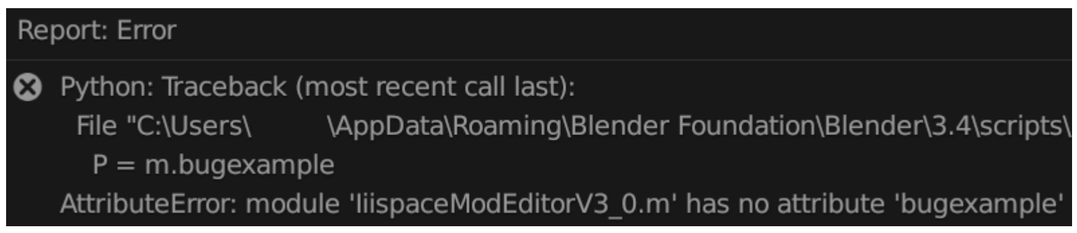
E-mail:
oorcer@gmail.com

Report Example

1. Blender version: 3.4
2. Addon version: 22.11
3. OS: Windows 11
4. CPU: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz 2.59 GHz
5. RAM: 32.0 GB
6. GPU: GeForce RTX 3060
7. Description: Error when click the “Call Settings” button in N-panel
8. Traceback:

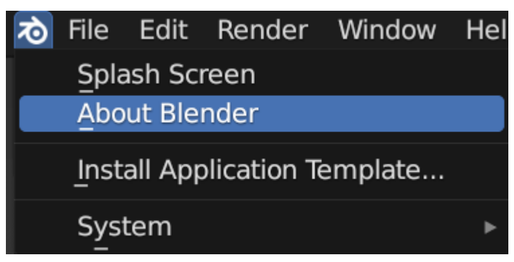
```
Read prefs: C:\Users\  \AppData\Roaming\Blender Foundation\Blender\3.4\config\userpref.blend
-- reg --
-- new file after --
-- unit system changed --
-- unit length/scale changed --
-- subscribe --
[[[[ update_link_data ]]]]
[[[[ update_link_data ]]]]
Traceback (most recent call last):
  File “C:\Users\  \AppData\Roaming\Blender Foundation\Blender\3.4\scripts\addons\IiispaceModEditorV3_0\debug_draw.py”, line
632, in invoke
    P = m.bugexample
AttributeError: module ‘IiispaceModEditorV3_0.m’ has no attribute ‘bugexample’
Error: Python: Traceback (most recent call last):
  File “C:\Users\  \AppData\Roaming\Blender Foundation\Blender\3.4\scripts\addons\IiispaceModEditorV3_0\debug_draw.py”, line
632, in invoke
    P = m.bugexample
AttributeError: module ‘IiispaceModEditorV3_0.m’ has no attribute ‘bugexample’
```

Attachment: Image/Video (If available). Note that Blender version, Addon version and Traceback are important info to the developer.



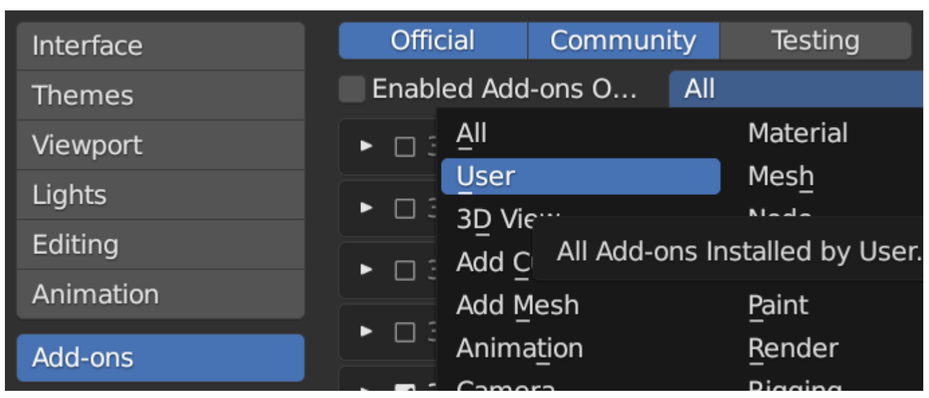
Get Blender version

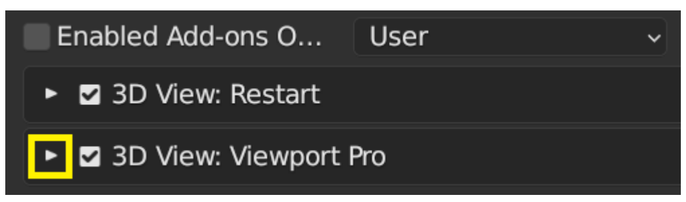
Icon > About Blender



Get Addon version

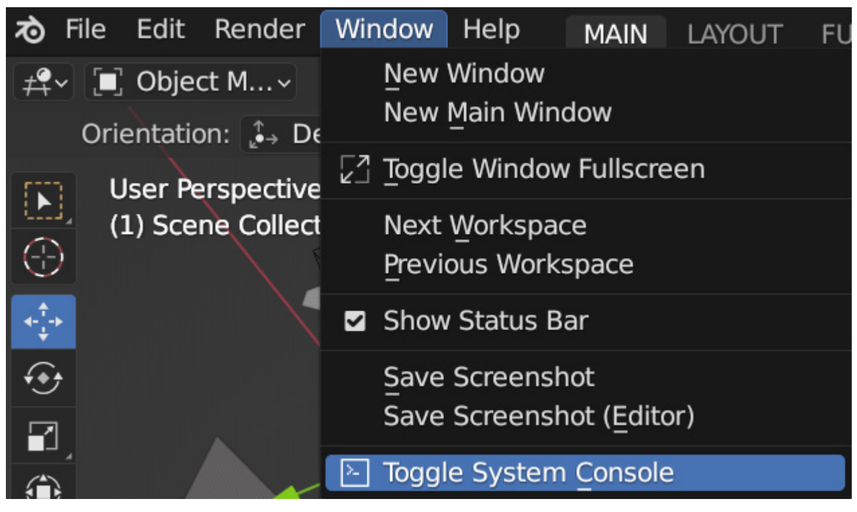
Edit > Preferences
Add-ons > Filter > User
Expand button





Get Traceback

Window > Toggle System Console



Copy all text in the Console

Known issues and limitations

This is the first experimental version of this Add-on, it may be unstable and is for testing only.

1. Unexpected result when editing Included Angle from the Mesh Editor in Blender 3.6.
2. Undo function are not available in N-panel prefences properties. Use the Settings Editor instead.