

# Rectangular

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*Version 1.1.2, by Giorgio Bianchini*

**Description:** Computes the coordinates for a rectangular tree.

**Module type:** Coordinate

**Module ID:** 68e25ec6-5911-4741-8547-317597e1b792

This module computes coordinates for the nodes of the tree in a "rectangular" style. The root node of the tree is placed at the left, and branches expand horizontally towards the right (the orientation of the tree can be changed with the [Rotation](#) parameter).

For the default value of the parameters below, let  $n$  be the number of taxa (i.e. leaves) in the tree.

## Parameters

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### Maximum default aspect ratio

*Global setting*

**Control type:** Number spin box

**Default value:** 1.3

**Range:**  $[1.0, +\infty)$

### Width

**Control type:** Number spin box

**Default value:**  $20 \cdot t / \min l$

**Range:**  $[0, +\infty)$

This parameter determines the width of the area covered by the tree.

$t$  is the total length from the root node of the tree to the farthest tip;  $\min l$  is the minimum branch length that is  $> 0$ . If the default width cannot be computed (e.g. because the tree does not have any branch length information), the default width is equal to the default height.

The default width and height are adjusted to keep an aspect ratio below the [Maximum default aspect ratio](#).

## Height

**Control type:** Number spin box

**Default value:**  $14 \cdot n$

**Range:**  $[0, +\infty)$

This parameter determines the height of the area covered by the tree.

The default width and height are adjusted to keep an aspect ratio between 9:16 and 16:9.

## Rotation

**Control type:** Slider

**Default value:**  $0^\circ$

**Range:**  $[0^\circ, 360^\circ]$

This parameter determines the rotation of the tree coordinates.

## Fixed rotations

**Control type:** Buttons

**Buttons:**

- $0^\circ$
- $90^\circ$
- $180^\circ$
- $270^\circ$

These buttons can be used to quickly set the value of the [Rotation](#) to predefined values.

## Coordinate shift

**Control type:** Drop-down list

**Default value:** None

**Possible values:**

- None
- Relative
- Absolute

This parameter determines the kind of coordinate shift that is applied. If the value is `None`,

no coordinate shift is applied. If the value is `Relative`, the coordinates for each point are shifted by the amount specified by the selected `X` and `Y` attributes, relative to their default position. If the value is `Absolute`, the coordinates are set to the value specified by the selected `X` and `Y` attributes, regardless of their default position.

## X shift

**Control type:** Check box

**Default value:** Unchecked

If this check box is checked, the X coordinates of the tree nodes are shifted. Otherwise, they are left as is.

## X attribute

**Control type:** Attribute selector

**Default value:** Length

This parameter determines the attribute used to shift the X coordinate of the points.

## Y shift

**Control type:** Check box

**Default value:** Unchecked

If this check box is checked, the Y coordinates of the tree nodes are shifted. Otherwise, they are left as is.

## Y attribute

**Control type:** Attribute selector

**Default value:** Length

This parameter determines the attribute used to shift the Y coordinate of the points.

## Custom script

**Control type:** Source code

**Default value:**

```

using PhyloTree;
using System.Collections.Generic;
using TreeViewer;
using VectSharp;

namespace ae9ca99625c1c4d888ec40c46a60f24e0
{
    //Do not change class name
    public static class CustomCoordinates
    {
        //Do not change method signature
        public static void GetCoordinates(TreeNode tree, ref
Dictionary<string, Point> coordinates)
        {
            //TODO: change the coordinate values contained in
            the coordinates dictionary
        }
    }
}

```

This script can be used to modify the coordinate values.

## Apply

**Control type:** Button

This button applies changes to the other parameter values and signals that the tree needs to be redrawn.

## Further information

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Here is an example of a tree drawn using rectangular coordinates:

