## Documentation for the use of the tikzcivil package

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# Contents

L	Draw	ing f	or the Structural Analysis
	1.1 C	Comm	ands
	1	.1.1	\Support command
	1	.1.2	\MassWithSpring command
	1	.1.3	\Frame command
	1	.1.4	\FrameSimple command

CONTENTS 2

### 0.1 Introduction

### Chapter 1

## Drawing for the Structural Analysis

#### 1.1 Commands

#### 1.1.1 \Support command

This command is used to generate different types of supports, like fixed, pinned or sliding supports. They can also be rotated.

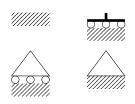


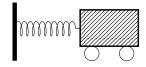
Figure 1.1: Types of supports available.

Table 1.1: Options for the \Support command

Option	Description	default
widht position type	defines de width of the support (tuple) defines the position of the support defines the type of support. Alternatives: fixed, pinned, sliding, fixedsliding	1cm {0,0} fixed
angle	rotation in degrees of the support (counterclockwise)	0

#### 1.1.2 \MassWithSpring command

This command draws a typical mass-spring system. It supports also an optional damper and displacement. The basic behavior of this command is shown in fig. 1.2.



```
\begin{tikzpicture}[scale=1]
  \MassWithSpring[]
\end{tikzpicture}
```

Figure 1.2: Mass-Spring system

In many situations we would like to describe more interesting systems. This can be achieved applying the optional key values and using the command multiple times, as shown in fig 1.3. As it can be seen, creating this kind of drawings is very easy and straightforward.

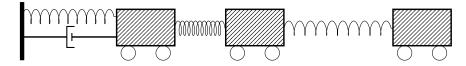


Figure 1.3: More complex mass-spring system

#### 1.1.3 \Frame command

Thus command draws a frame with its mass concentrated above. It is a very common model to describe later a multi-story building in 2D. This command has many options, useful to change the displacement, position, use of supports, damper, among others. In the fig. 1.4 can be seen the normal output of the command without any options.

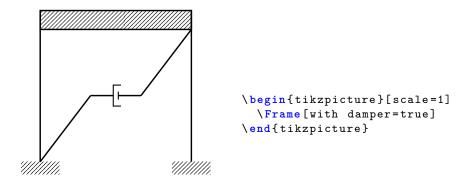


Figure 1.4: A frame with the mass concentrated at the top.

As with the \MassWithSpring command, we can create more complex structures, and even add some displacement to it or add a tuned mass damper on the top (why not?). This can be seen on fig. 1.5.

Option	Description	default
height	defines the height of the frame/story	4cm
widht	defines de width of the frame	4cm
mass thickness	defines the thickness of the concentrated mass	0.4cm
position	(tuple) defines the position of the base of the left col-	{0,0}
	umn	
with support	boolean option, that allows to show supports or not	true
with damper	boolean option, that defines the presence of a damper	false
	in the system	
displacement	defines the amount of horizontal displacement on the	$0 \mathrm{cm}$
	top of the frame	

Table 1.2: Options for the \Frame command

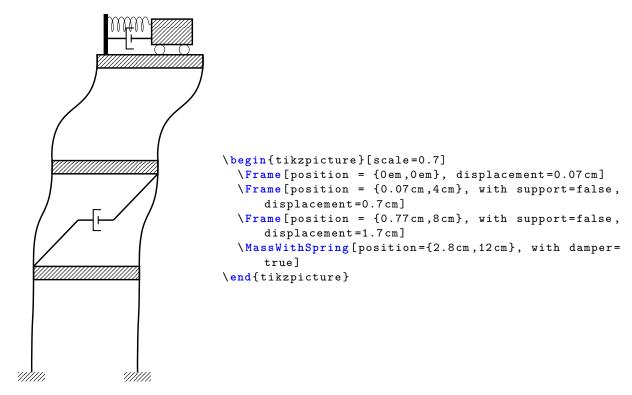


Figure 1.5: A set of frames put one above he other.

#### 1.1.4 \FrameSimple command

The \Frame command is best suited for dynamic systems, so when we want to draw a frame for other purposes, we should use this command. It creates a nice frame with bars, whose support's type can be changed. It also allows to vary its dimensions (width and hight) and makes possible to move each degree of freedom separately<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup>Not yet implemented

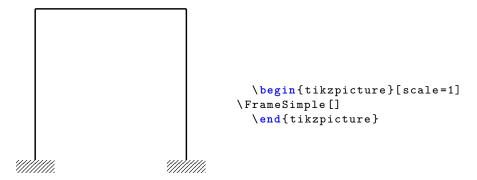


Figure 1.6: A simple frame.

## Chapter 2

Dibujos relacionados con la mecánica de suelos