

# Visualizing the robot model in RViz

On top of what we did, we can visualize the robot in RViz. This is optional, and it's something you will do mostly when you develop your application. After everything is working correctly and you switch to production mode, you won't need to start RViz.

## Starting and configuring RViz

Let's start RViz and see how to visualize the robot model as well as the TFs.

Keep the `robot_state_publisher` and `joint_state_publisher` nodes running. Then, in Terminal 3, run the following command:

```
$ ros2 run rviz2 rviz2
```

This will open RViz, but, as you can see, there is no robot model, and we have some errors on the left menu:

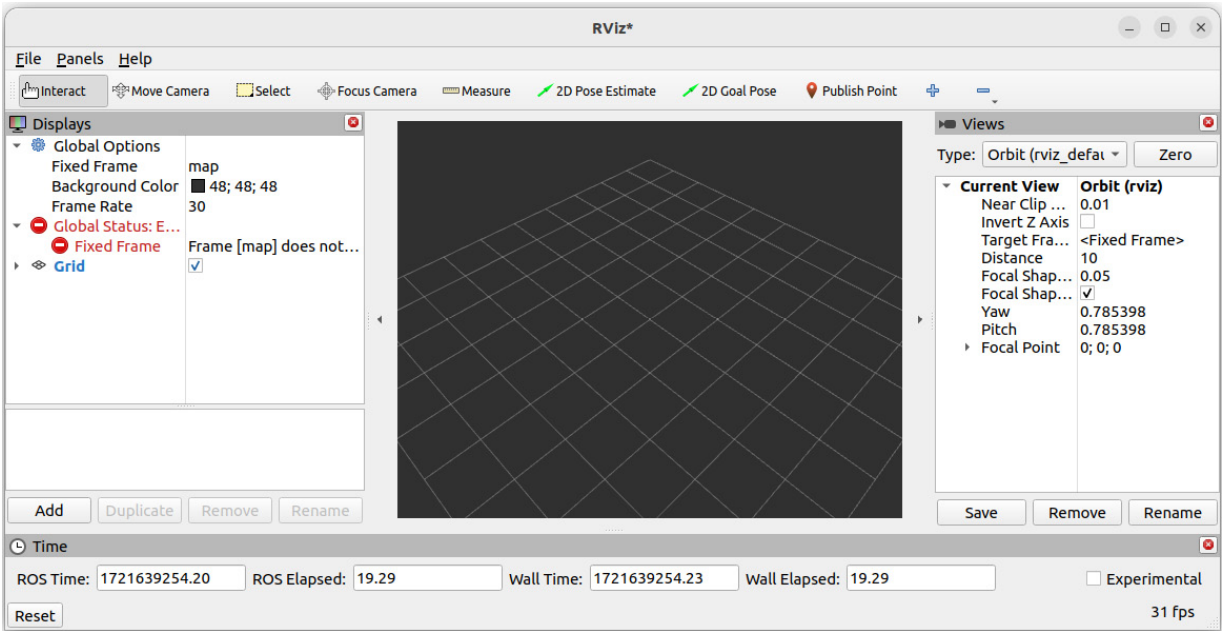


Figure 12.3 – RViz with no robot model and some errors

We need to do a bit of configuration to correctly visualize the robot model and the TFs. Then, we will be able to save this configuration and reuse it the next time we start RViz.

Follow these steps to configure RViz:

1. In the left menu, **Global Options | Fixed Frame**, change from **map** to **base\_footprint**. After that, **Global Status: Error** should change to **Global Status: OK**.
2. Click on the **Add** button on the left, scroll down, and double-click on **RobotModel**. You will have a new menu on the left side of RViz.
3. Open this new **RobotModel** menu, find **Description Topic**, and click on the empty space on the right side of the menu (this one is a bit tricky to find). You should see a drop-down menu; here, select **/robot\_description**. After this, the robot model should appear on the screen.
4. Click on the **Add** button again, scroll down, and double-click on **TF**. This will open a new menu, and you will see the TFs appear on the screen.
5. If you want to see through the model, like we did before, open **RobotModel**, and reduce the **Alpha** (transparency) value from **1** to **0.8**, for example.
6. You can remove the extra menus on the right (**Views**) and at the bottom (**Time**) to get more space for the robot.

With all those settings, you should see the robot model and TFs the same way we did when we previously visualized the URDF with the `urdf_tutorial` package:

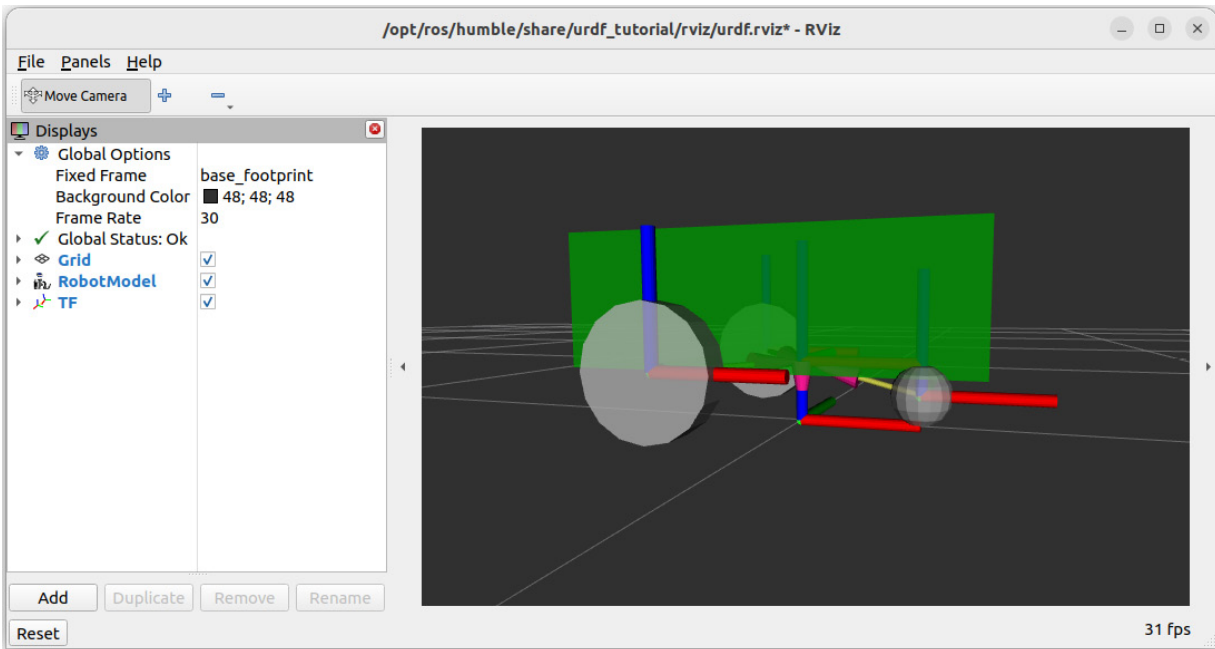


Figure 12.4 – RViz with the robot model and TFs

## Saving the RViz configuration

You will need to repeat those steps every time you start RViz. To avoid doing this, we will save the configuration.

Click on **File | Save Config As**. Let's name the file `urdf_config.rviz` (for these files, use the `.rviz` extension), and place it inside your home directory for now.

Make sure you can see the file, using a file manager or the terminal. If you didn't save the file correctly, you will need to manually do the full configuration again. Once the file is saved, you can stop RViz (`Ctrl + C` in the terminal).

Then, when you start RViz again, you can add an extra `-d` argument with the path to the configuration file:

```
$ ros2 run rviz2 rviz2 -d /home/<user>/urdf_config.rviz
```

This will start RViz exactly like you saved it: same menus, same view, same zoom, and so on. We will reuse this configuration file throughout this chapter.

### NOTE

*If you wish to change the configuration, all you have to do is modify whichever settings you want in RViz, save a new configuration file, and use this one instead.*

We now have everything we need: the URDF files and the RViz config file, and we know what nodes and parameters we have to start, and how to start them.

Let's now organize everything properly into a ROS 2 package. We will first create the package, and then add a launch file to start all the nodes at once.