

Quick Guide

Simulations can be performed in **guest** or **logged in** mode. Guest mode is the system default, but to save properties and/or simulation results in the database and retrieve them later, you have to be logged in the system. If you do not have a user account, you can create one in the **Login** page (Figure 1).

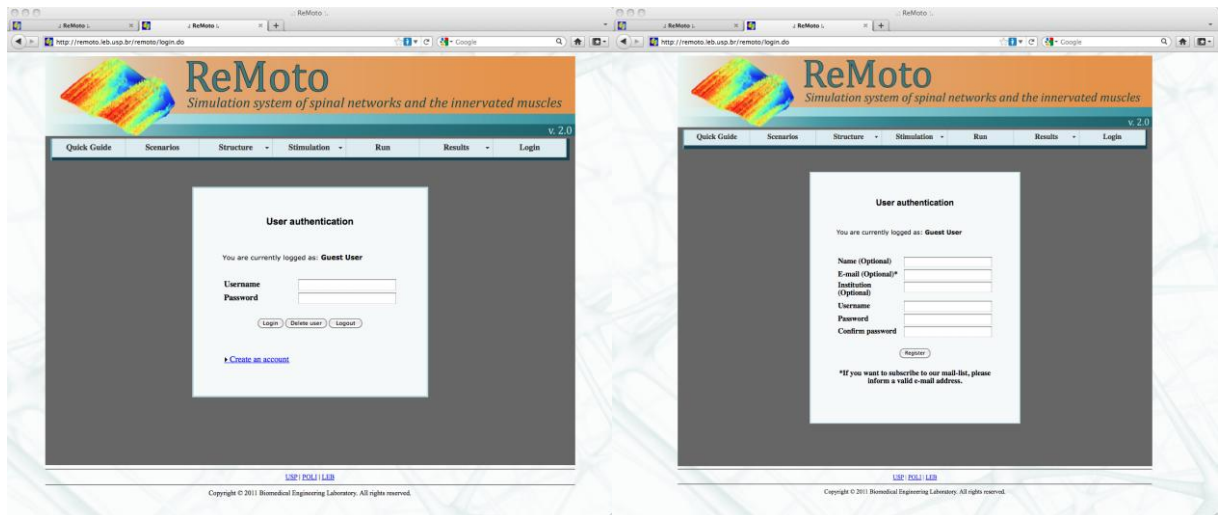


Figure 1. Login (left) and Registration (right) pages.

Using demonstrations and pre-loaded scenarios

In case you want to see the ReMoto simulator in action, it has some inbuilt demonstrations that provide preset values to the model. Just follow the steps described below in order to view the results:

- Select the **Demonstrations** menu;
- In the **Demo** drop-down menu select the desired demonstration (Demo). The name and a brief description of this demonstration will be shown (Figure 2);



Figure 2. Selecting a pre-loaded demonstration.

- Click on the **Load** button. Next, click **OK** on the message that will appear on your screen "*Load configuration? (current settings will be deleted)*";
- Now, select the **Run** menu and you will see the **Duration** and **Time step** used in this simulation. You do not need to change these values. So, click on the **Start** button and wait (you will see a progress bar at the center of your screen, as shown in Figure 3);

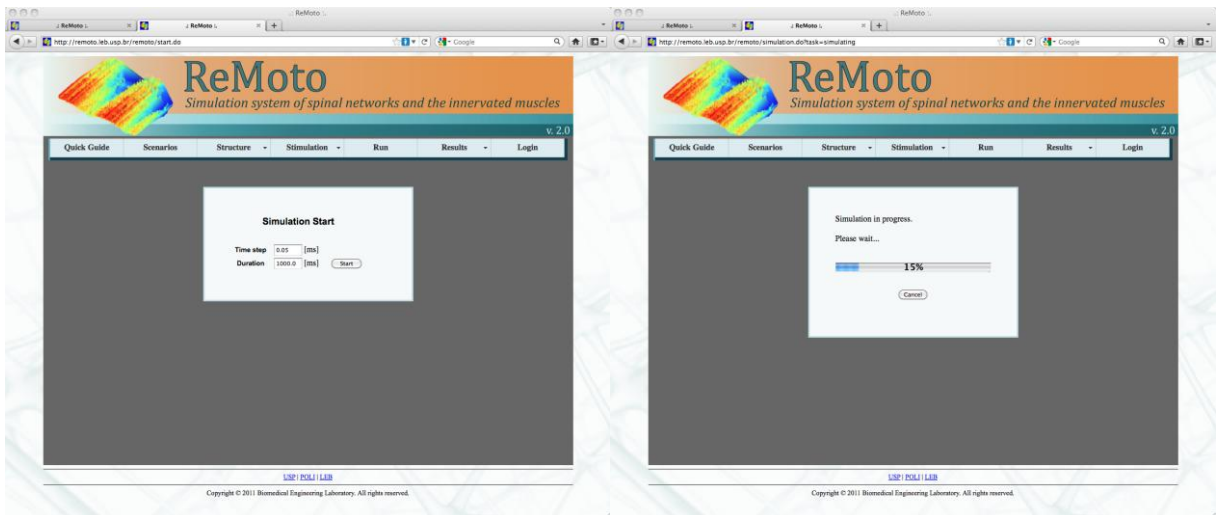


Figure 3. Left: Starting a simulation. Right: Simulation in progress.

- Finally, at the end of the simulation, the page **Simulation Results** will be loaded (Figure 4). Select the result that you want to see (e.g., Force, EMG, Soma membrane potential) and click on **Generate** button if you want to visualize a static figure in JPEG format or on **View as interactive graphic** if you want to visualize results in a graphic with zoom-in and drag capabilities. The latter requires a fast internet connection.

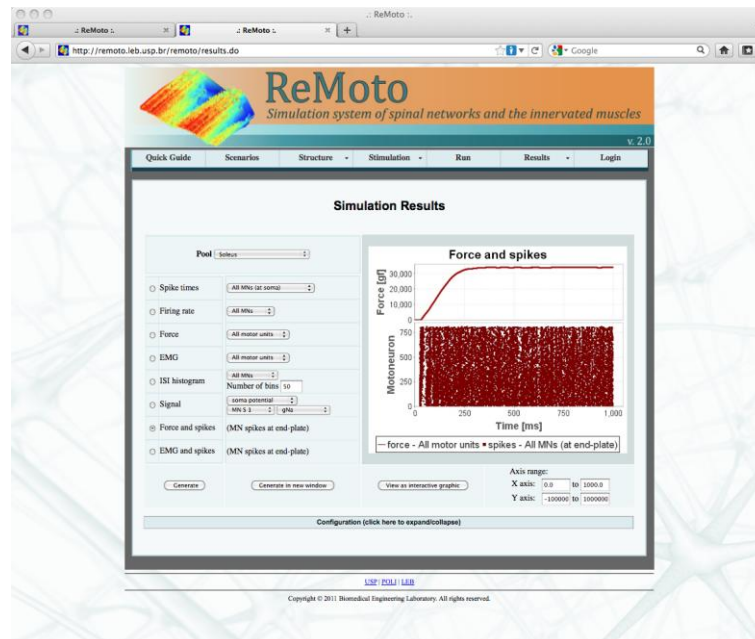


Figure 4. Simulation results page.

In addition to demonstrations we have provided pre-loaded scenarios. Scenarios differ slightly from demonstrations, since the neuronal and muscular structure are defined but the stimulation and/or descending commands are not. If you want to use a pre-loaded scenario, first follow the

steps 1-3 above, but select a specific Scenario instead of a Demo in the drop-down menu. Next, follow the steps described below to see the results:

- If you selected Scenarios 1 or 2 (concerning spinal reflexes) proceed to **Stimulation** menu;
 - Click on **Nerve stimulation** to expand the parameter definition (Figure 5);
 - The nerve that will be stimulated is already selected (PTN or CPN), but you have to define the values of the stimulation parameters (Start time, Stop time, Current Peak, Frequency). Next, click on the **Apply** button;

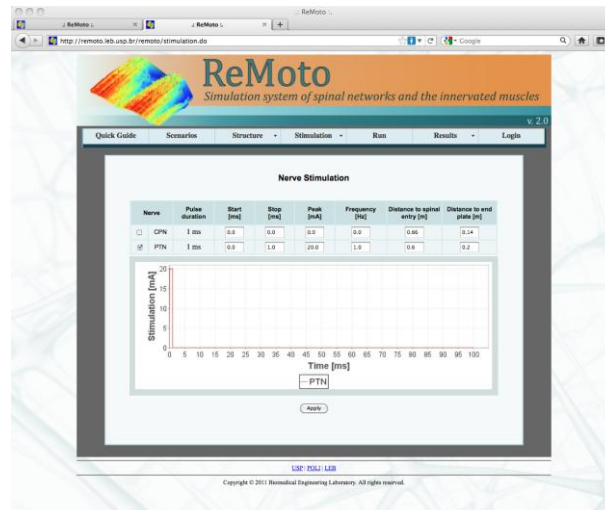


Figure 5. Electrical nerve stimulation.

- Once defined the stimulation, select the **Run** menu and click on **Start**;
- Finally, at the end of the simulation, the page **Simulation Results** will be loaded. Select the result that you want to view (e.g., Force, EMG, Soma membrane potential) and click on **Generate**;
- The graphic will be loaded and you will see a two-dimensional figure in JPEG format. If you want to see an interactive graphic, please, select the **View as interactive graphic** button.

Constructing your own structure and stimuli

- Choose how many neural nuclei and neurons will take part in the simulation, using the **Neural Elements** page (Figure 6) in the **Structure menu**. Click on the **Apply** button in order to save your choice. Please remember to use the **Apply** button every time you change any setting in any page;

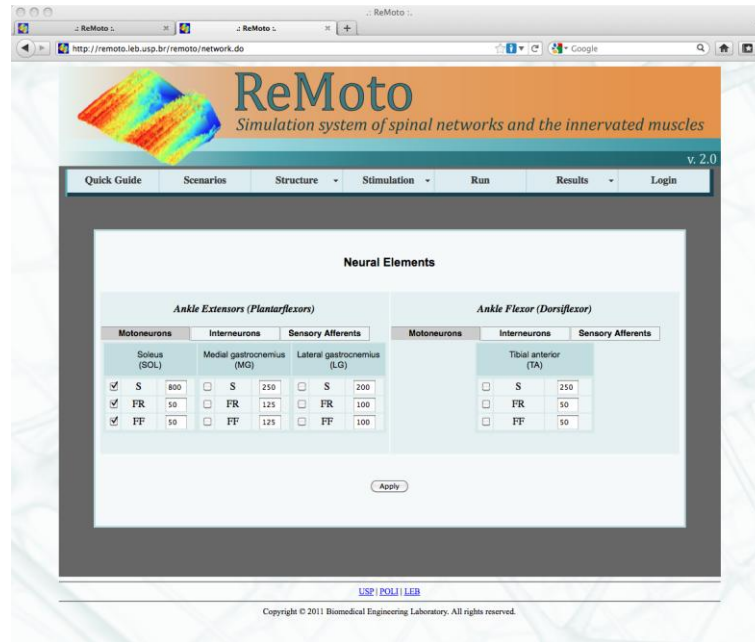


Figure 6. Configuration of neural elements.

- Activate the neural nuclei using the **Descending Commands** (**Structure** menu) and/or **Electrical stimulation** (**Stimulation** menu);
- You can change the parameter values of each element of the system by selecting the **Parameters** submenu (in **Structure** menu);
- Set the simulation **Time step** and **Duration** in the **Run** menu and click on the **Start** button;
- After finishing the simulation, you can either create different graphics (with zoom-in and drag capabilities) as selected in the **Simulation Results** page or export figures and raw data for further documentation and analysis.

In a near future a complete User's Guide will be available. In the meantime, a broad tutorial is provided in the site as a learning tool. In addition, the pre-loaded demonstrations and scenarios could be the starting point for your simulations.