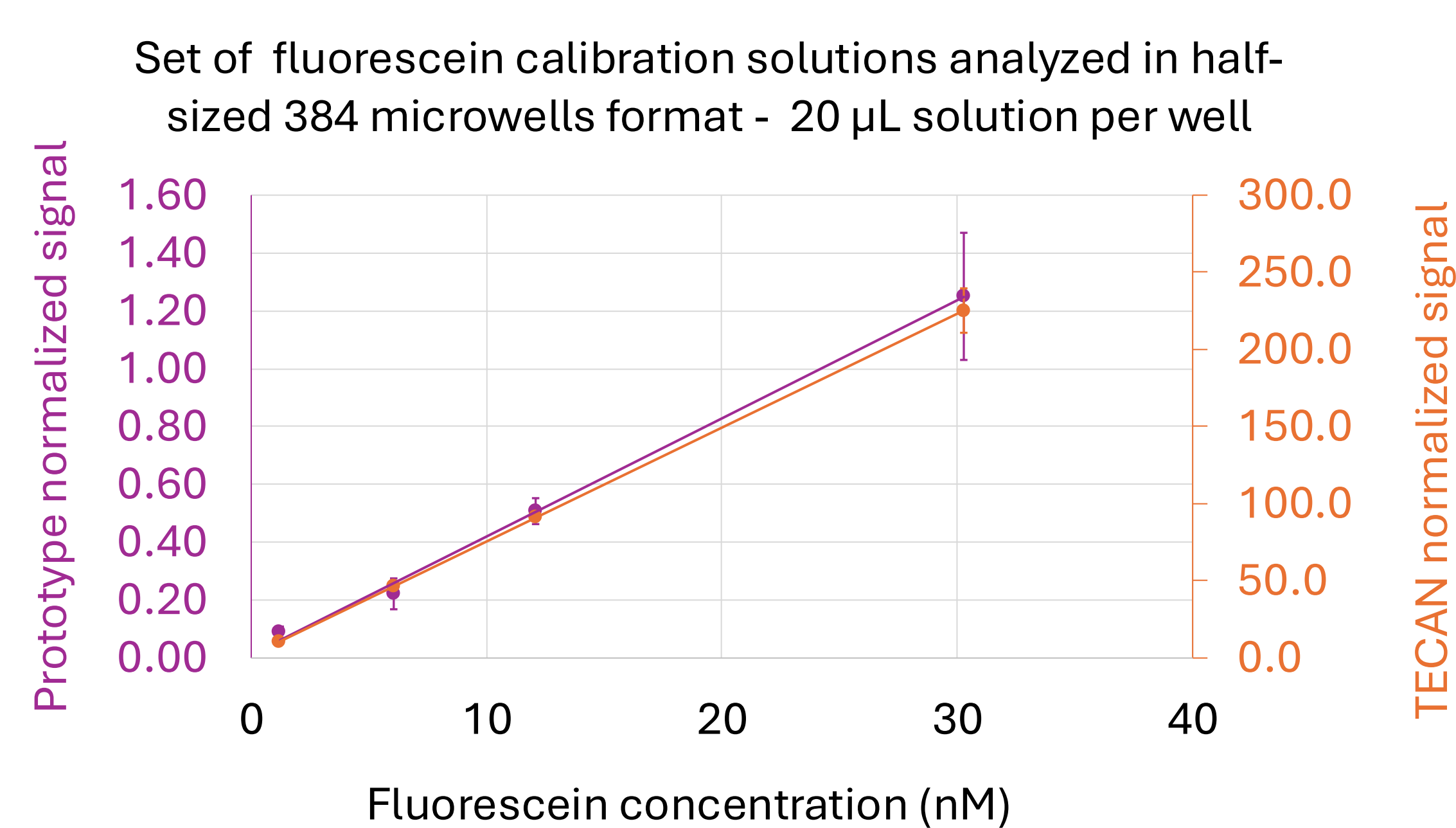


REGULATION AND SIGNAL CONDITIONNING OF LUMINESCENCE TEST BENCH

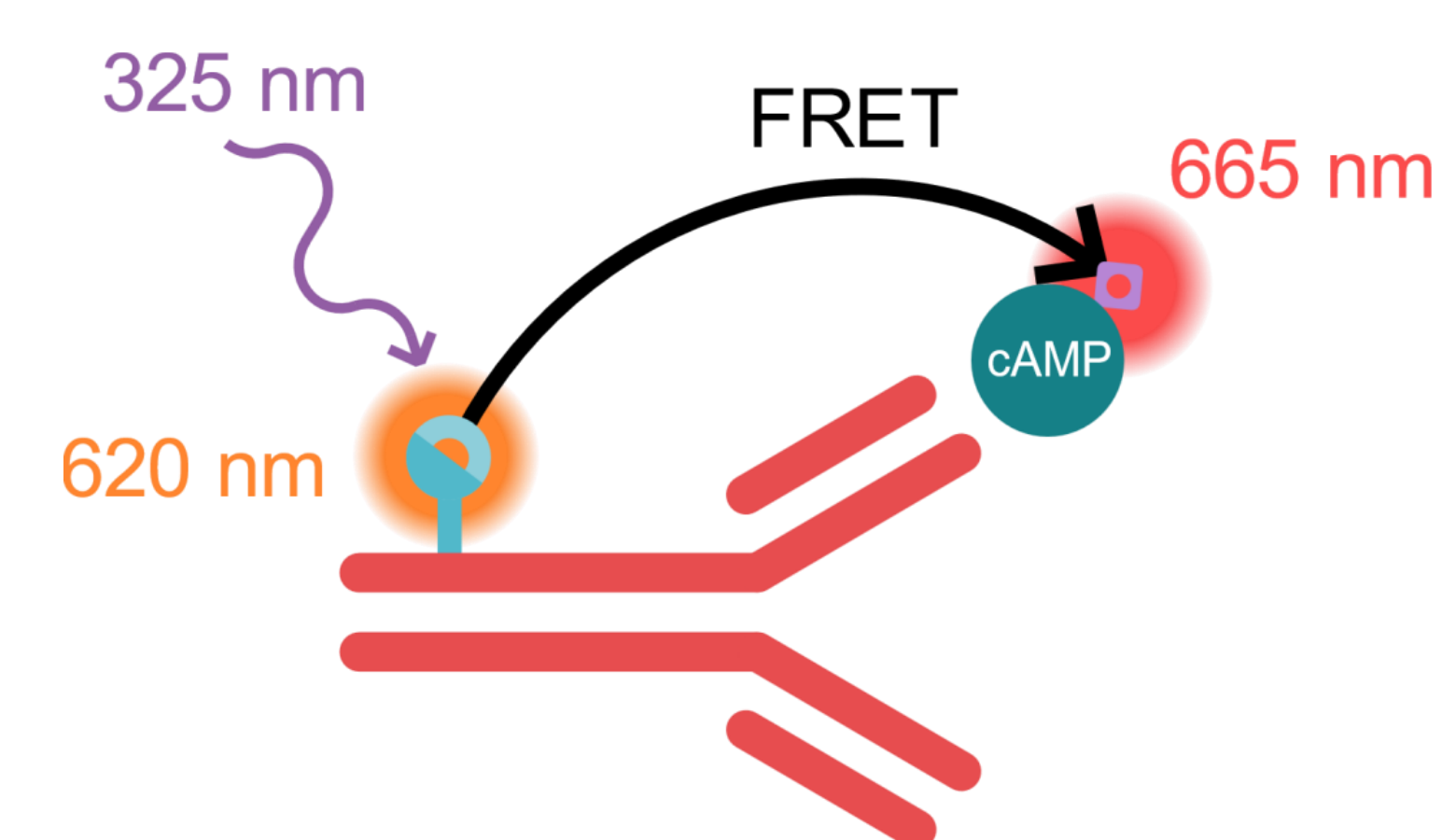
The RADIAC team aims to design a luminescence measuring instrument compatible with a broad range of samples, mainly biological ones. This instrument must fit severe radiative environments (non-ionizing and ionizing) while being small and lightweight. It must also be able to perform measurement in batch on biological screening microplates in 384 wells format. Each well contains a total volume of reagents/samples as small as 20 μL . Mathilde LABAT is doing her PhD thesis searching for innovations leading this way. We are now searching for a master student that can collaborate to develop this test bench by combining several electronic instruments in one or more smartphone-sized electronic board.

This means to solve several problems :

- Design a stable yet agile current source circuit
- Embed the SiPM conditioning circuit
- Design a data acquisition circuit with the highest possible time and voltage precision
- Design the embedded circuit that synchronizes the whole system
- Add multi-axes actuators



Feasibility study of fluorescence measurement



Principle of fluorescence resonance energy transfer

➤ To scale down the control and acquisition electronic system

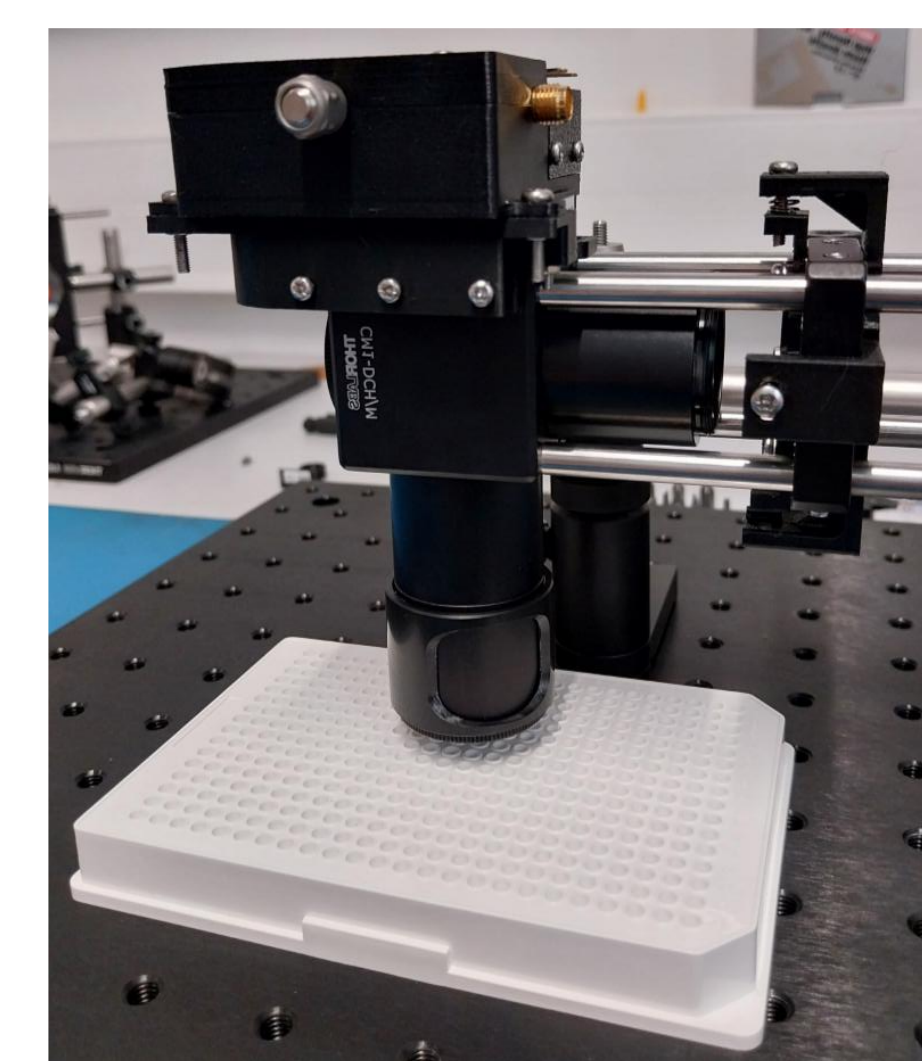
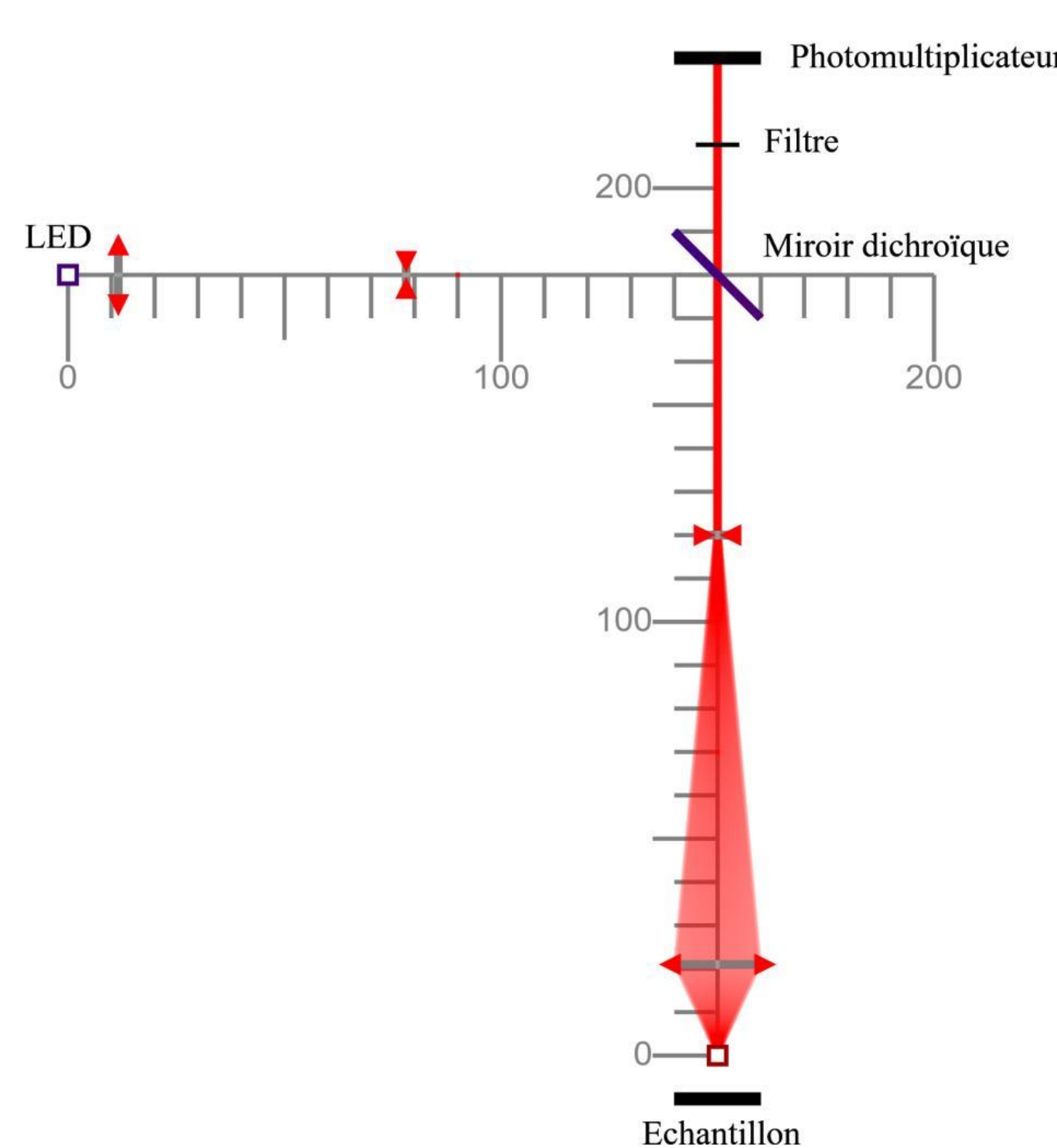
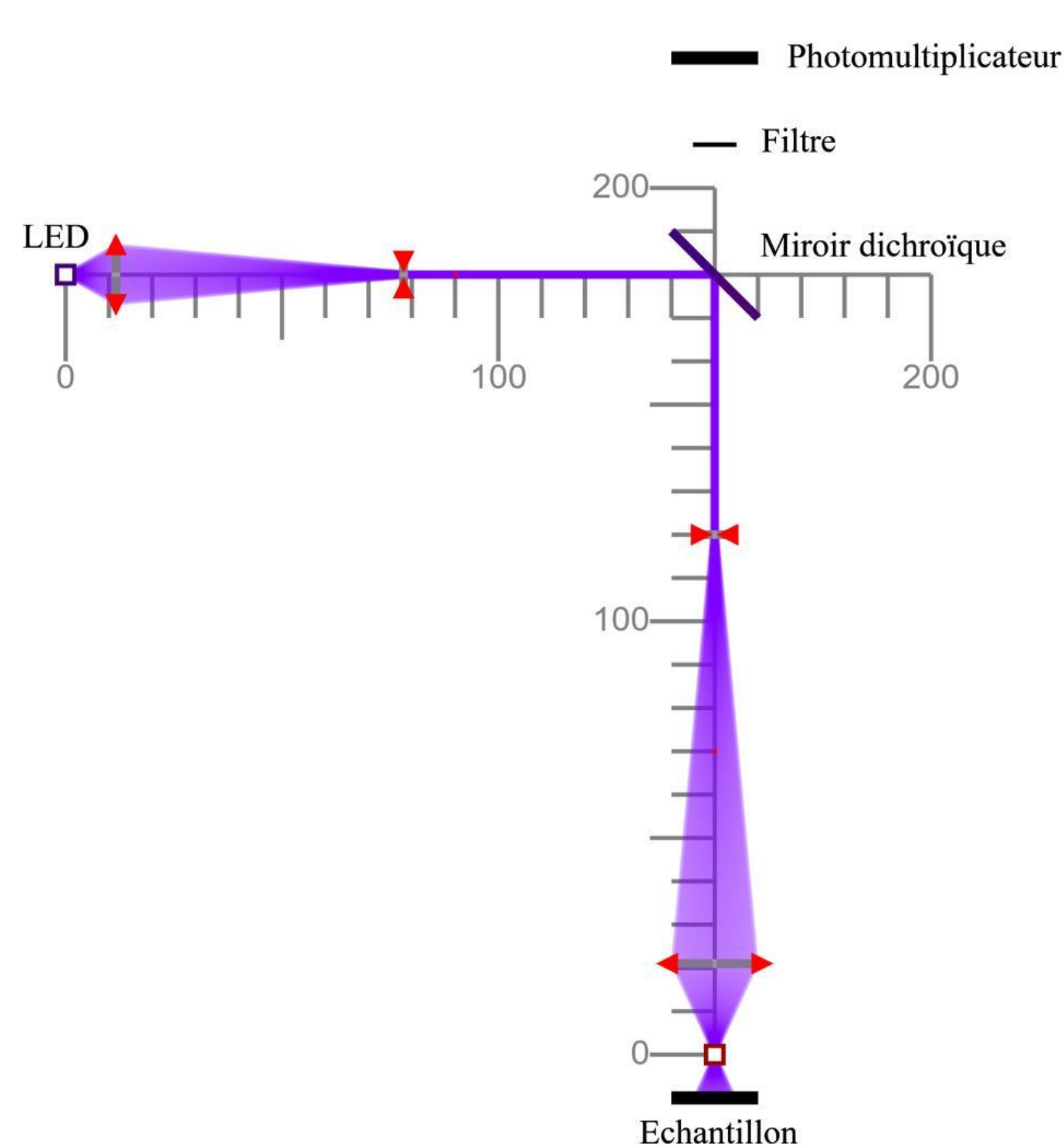
EXCITATION STAGE

+

MEASURE STAGE

=

CURRENT PROTOTYPE



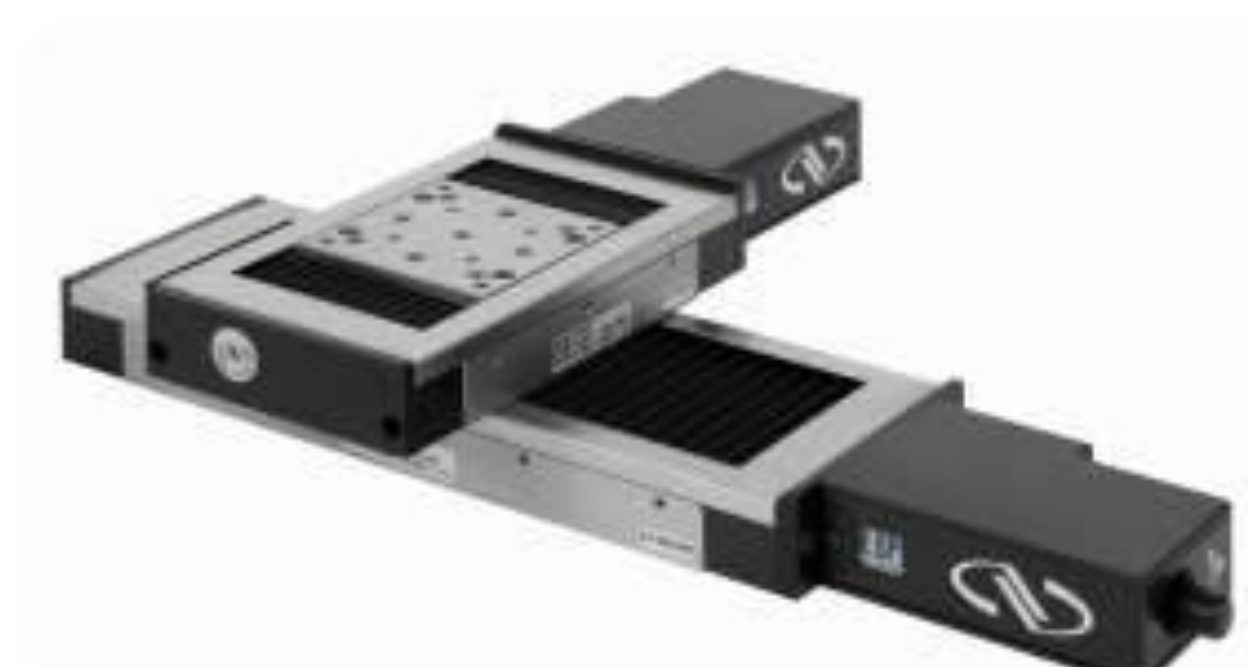
Stable current source

➤ To size down



50 Ω oscilloscope

➤ To size down



Moteurs de positionnement 2 ou 3 axes

➤ To include