**Report of Seminar 8**

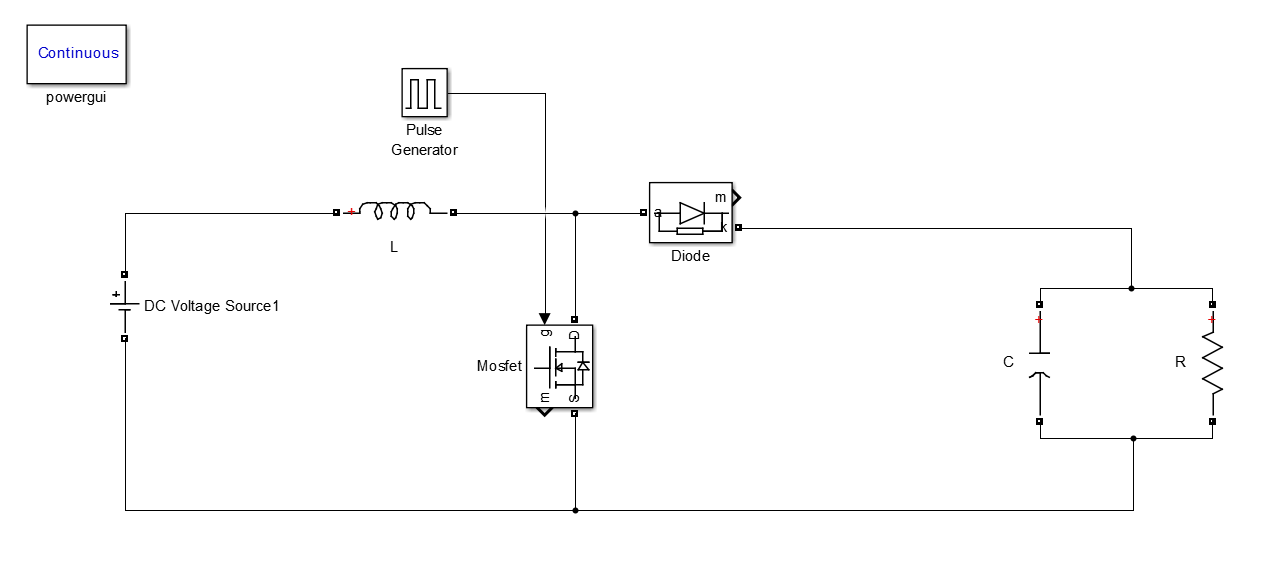
Please propose **2-3** realization approaches according to the required functions assigned to each group. It is asked to:

* Take into account the practical **components parameters** and **control scheme**;
* Discuss the **differences** between the proposals that you provide;
* Select the optimal one among your proposals and state your reason;
* Simulation and analysis on operating principle.

**Group 6:** You are assigned to design a DC-DC Switching Mode Power Supply. The input voltage should be set as 12Vdc for each phase, and the output voltage and current should be set as 220Vdc/30A. You should also pay attention that the peak-to-peak value of the output voltage ripple should not be larger than 5% of nominal output voltage.

1. **Isolated DC/ DC boost converter**

**Model:**



As we can see,it’s a boost circuit and BOOST circuit is a DC-DC chopper circuit. It can be the output voltage is higher than the input voltage. Which can be divided into a process of charging and discharging processes.

**Calculation and parameters setting:**

1. For the requirements given above, we made a calculation as follow to find out the duty cycle.

DC=0.94545454545

1. Then we calculated for the value of the inductance.

The resistance is assumed as 

the frequency is assumed as 40kHz.

=

We choose 1.2 LC as our practical value of inductance.



1. The ripple wave

ΔU0=

So we will know

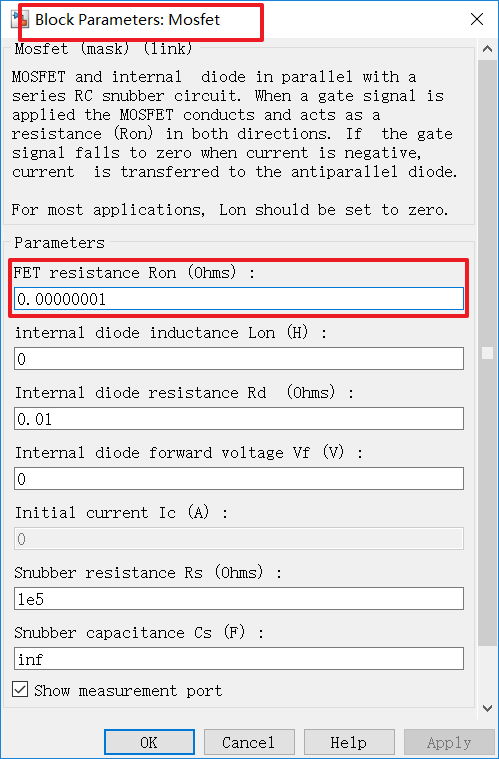
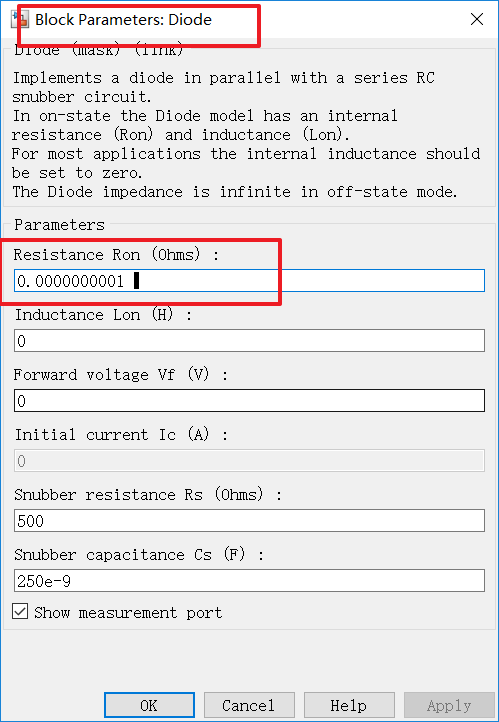
C==

C

In accordance with convention, put some margin to the C and we can get

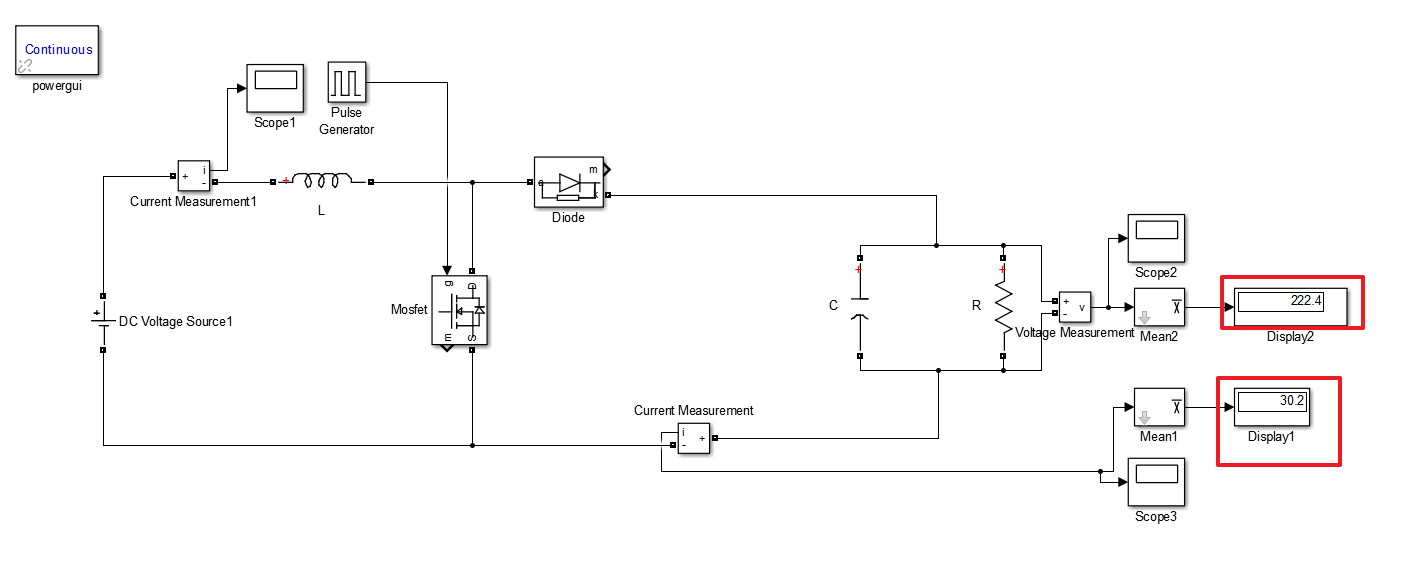


1. Some necessary settings

Resistance of the two switch can be very ideal and through this way, the waveform of the current can be more beautiful.

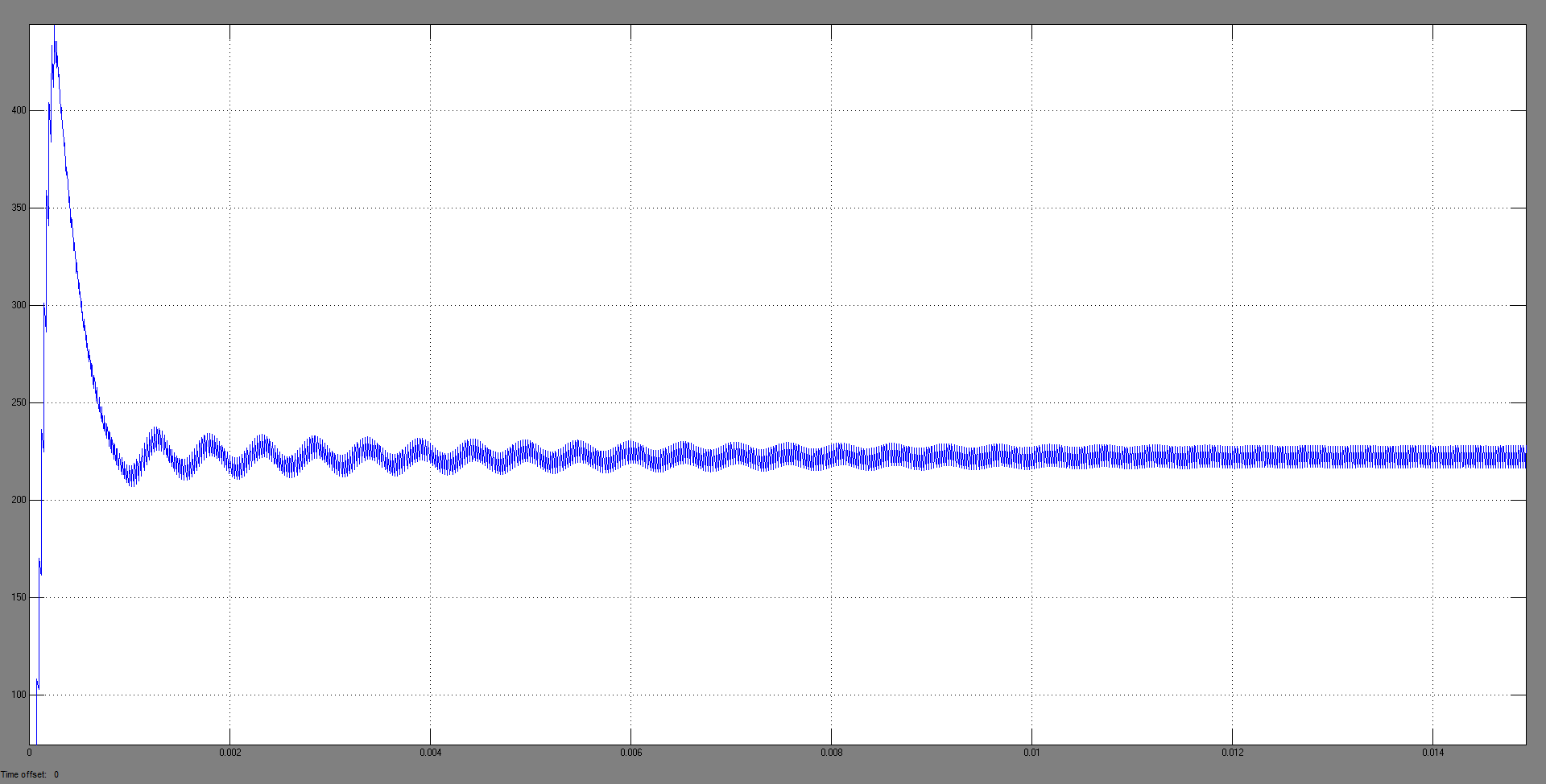
**Simulation:**

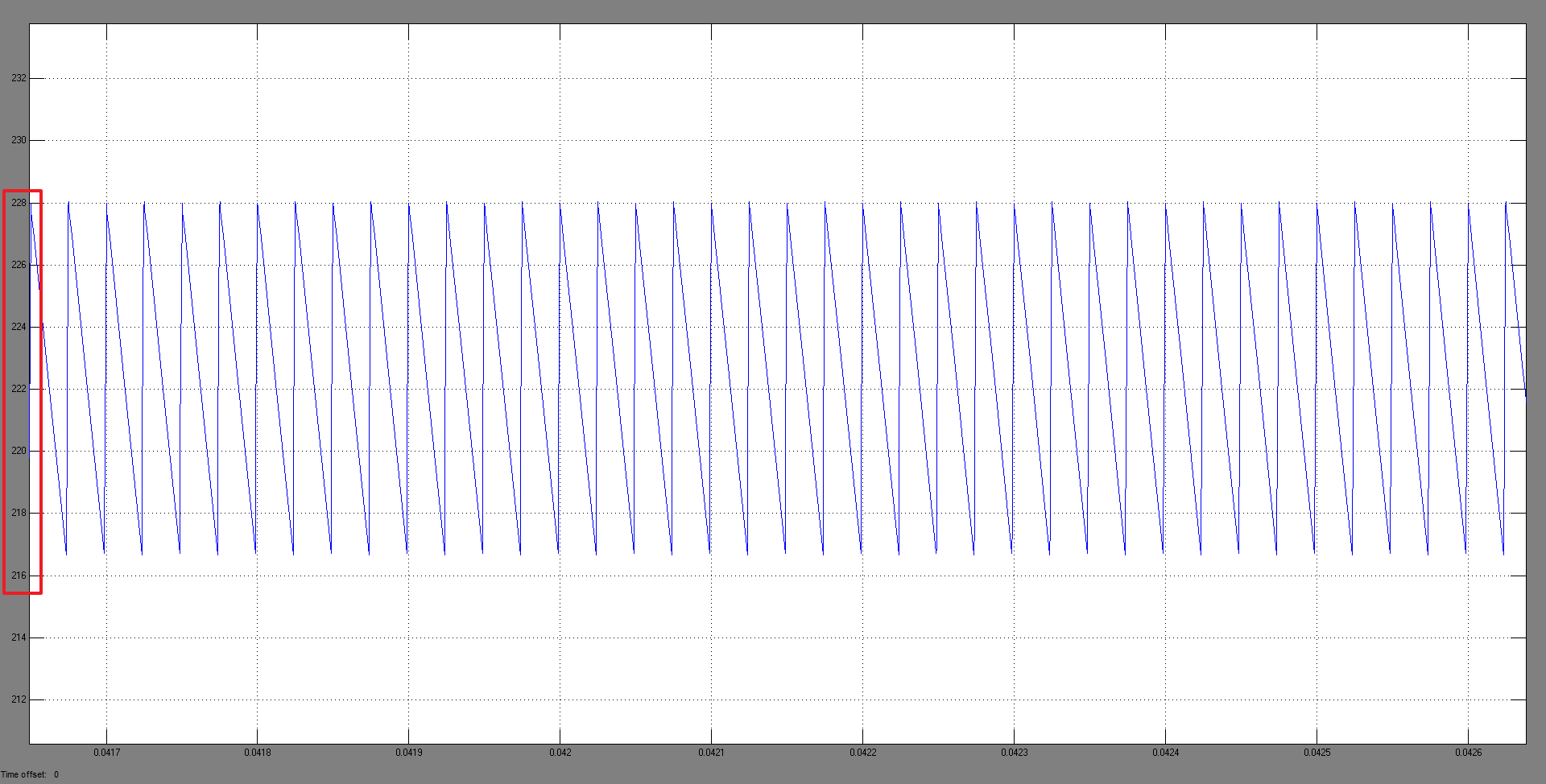




Through this way, we can easily get the result of the aim voltage and current.

**Waveforms**



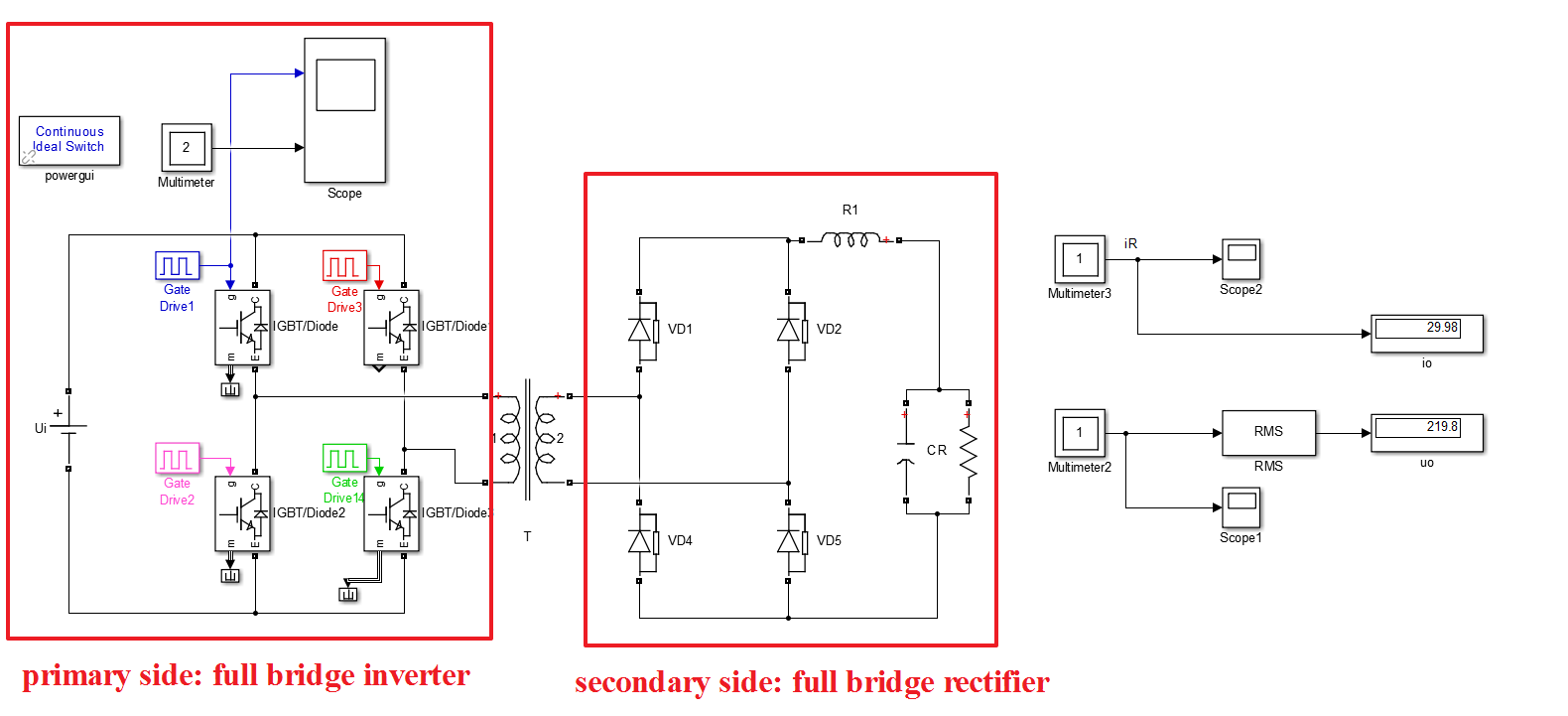




Apparently to control the , just adjust the C of the capacitor and the frequency of the switching.

1. **Non isolated switching power supply**

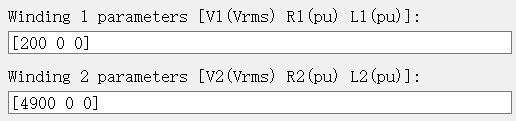
**Model:**



**Calculation and analysis:**

占空比啥的

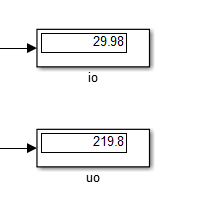
各个参数怎么来的

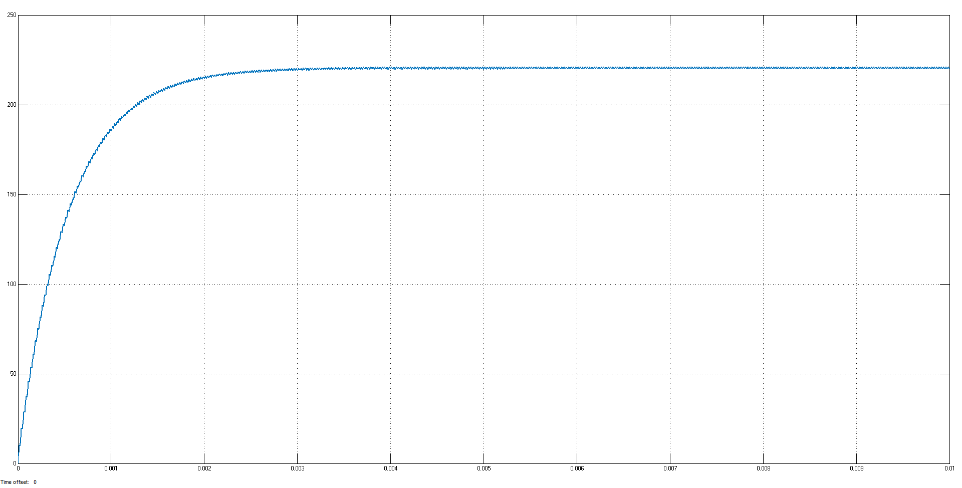




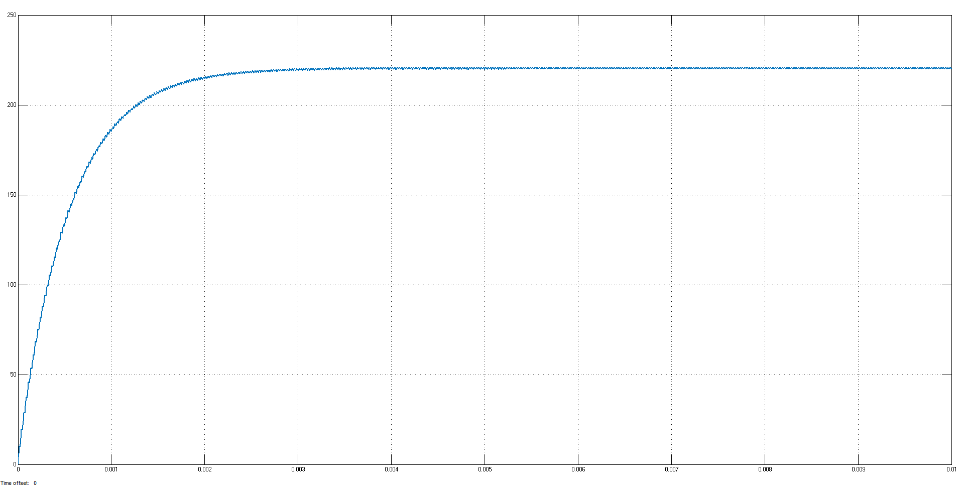


**Simulation**

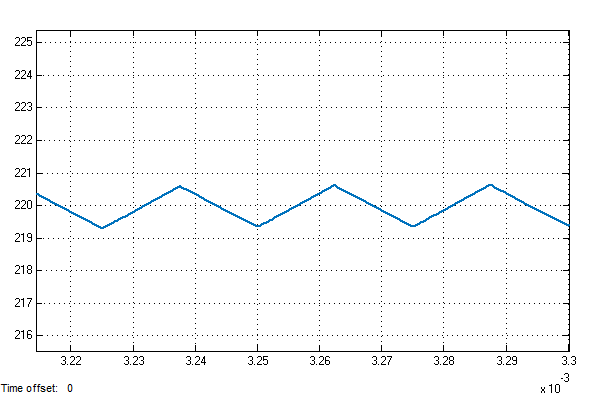
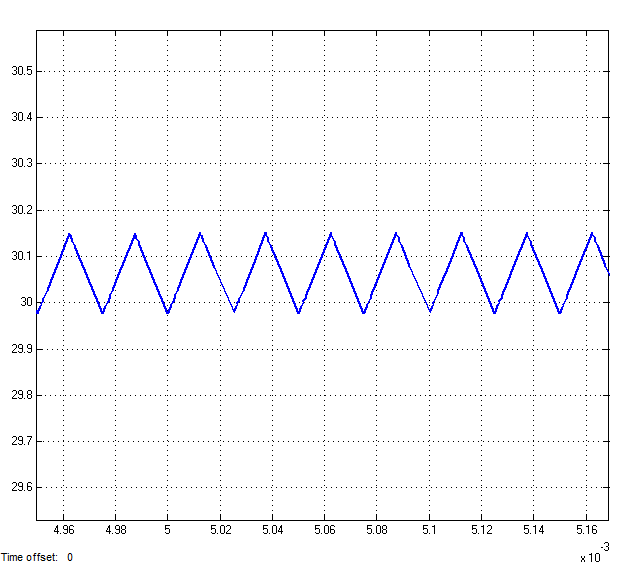




current

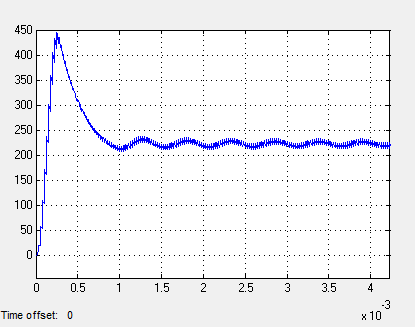
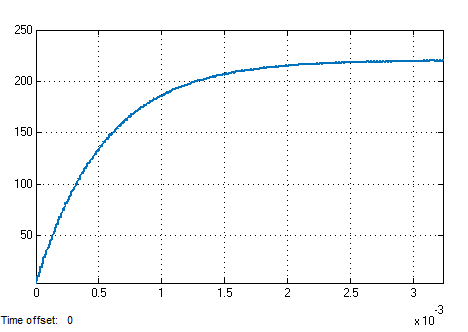


voltage



**Comparison:**

超调量和纹波系数…

所以第二种更稳定，动态性能更好