Instituto Tecnológico y de Estudios Superiores de Monterrey

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26 de Mayo

MRI Activity

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Grupo 301

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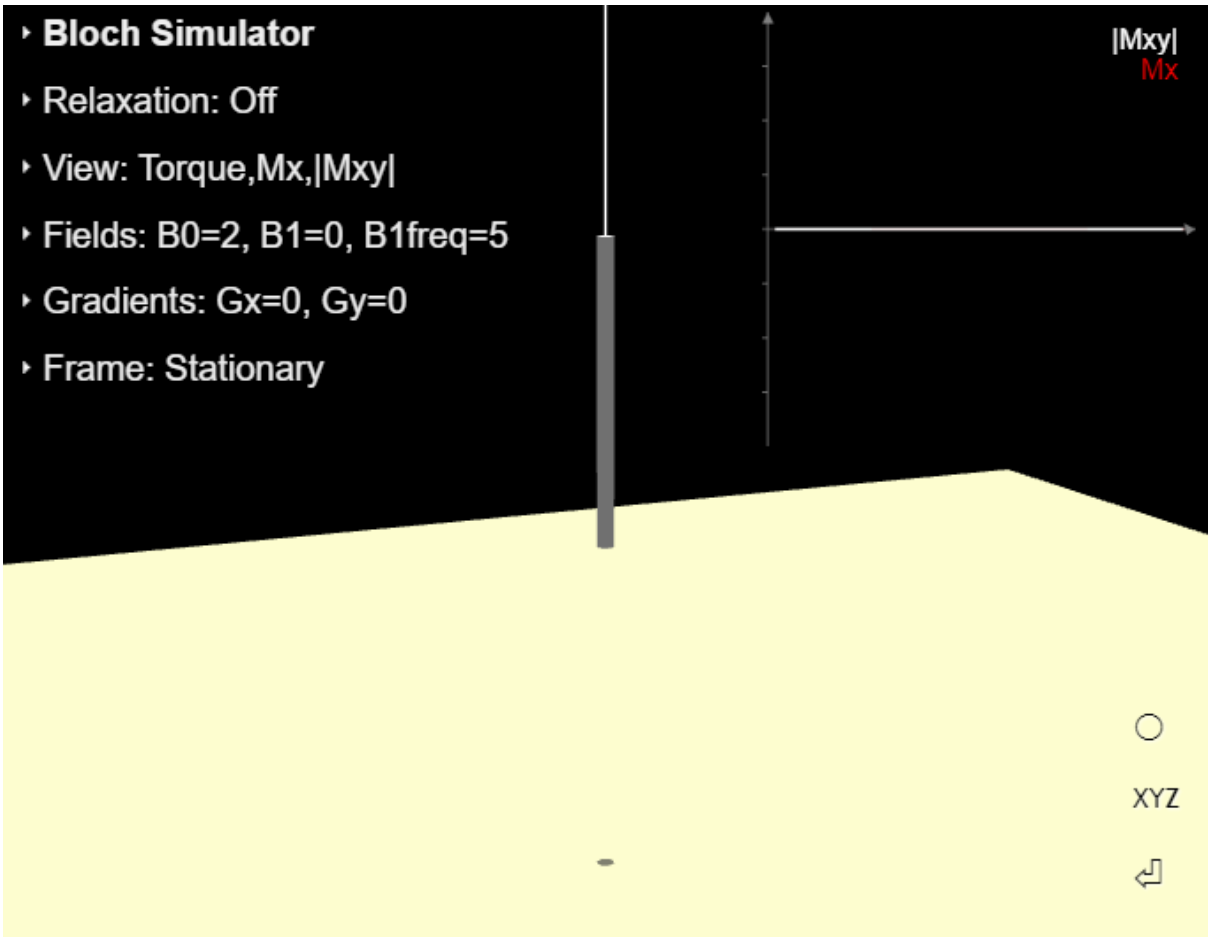
26 de Mayo

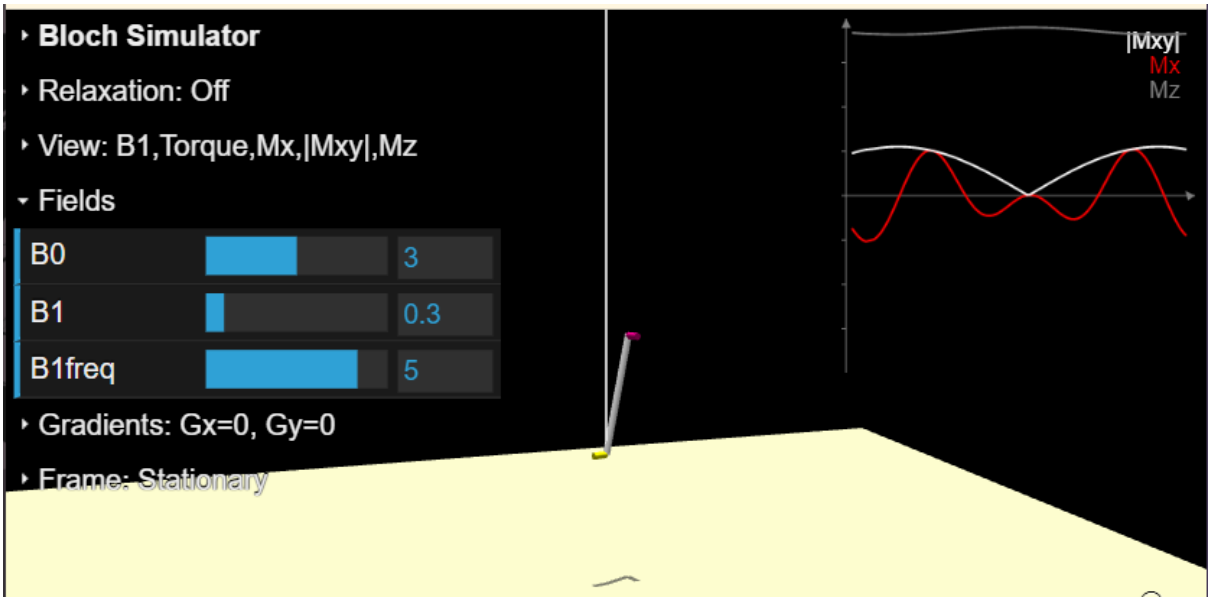
Monterrey, Nuevo León

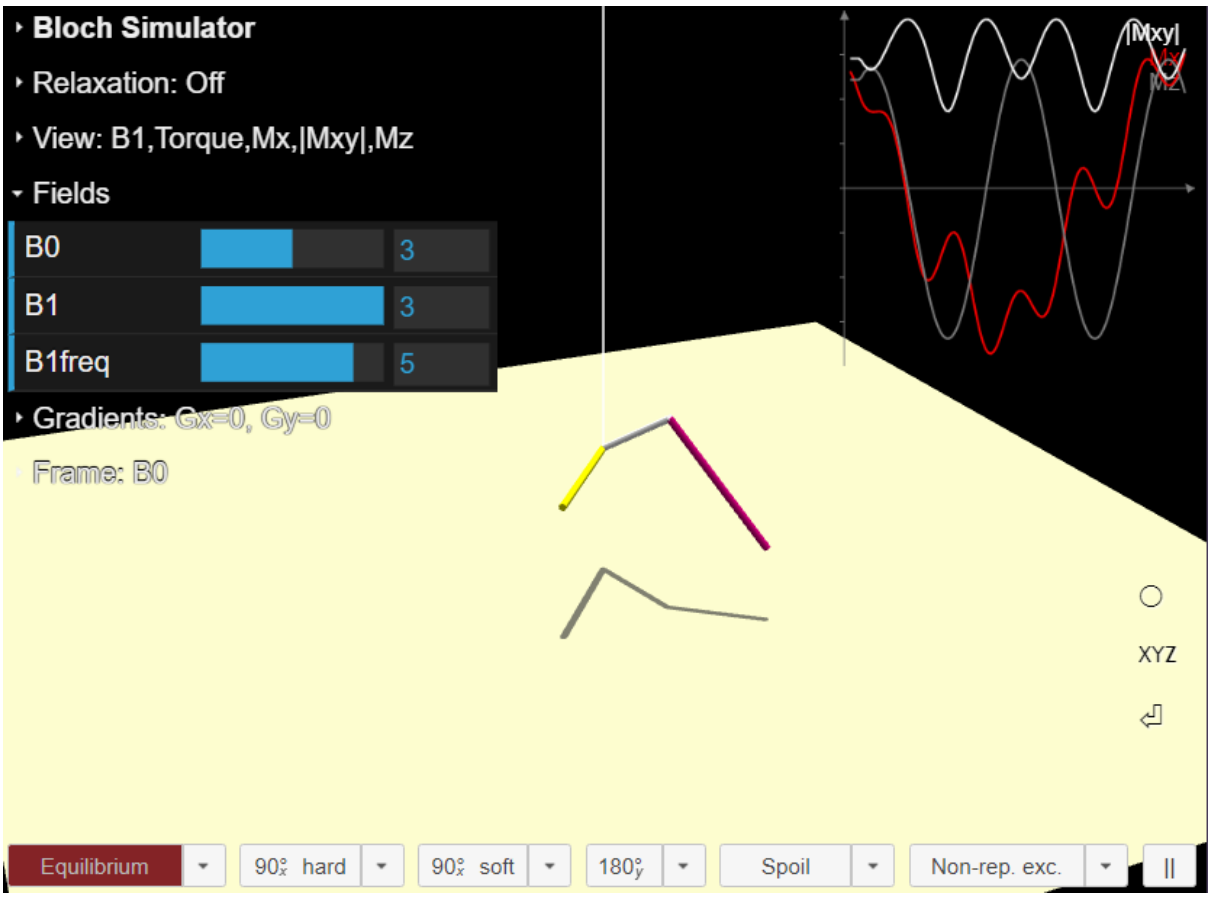
SEMESTRE FEB - JUN 2022

Step 1: Start in the equilibrium



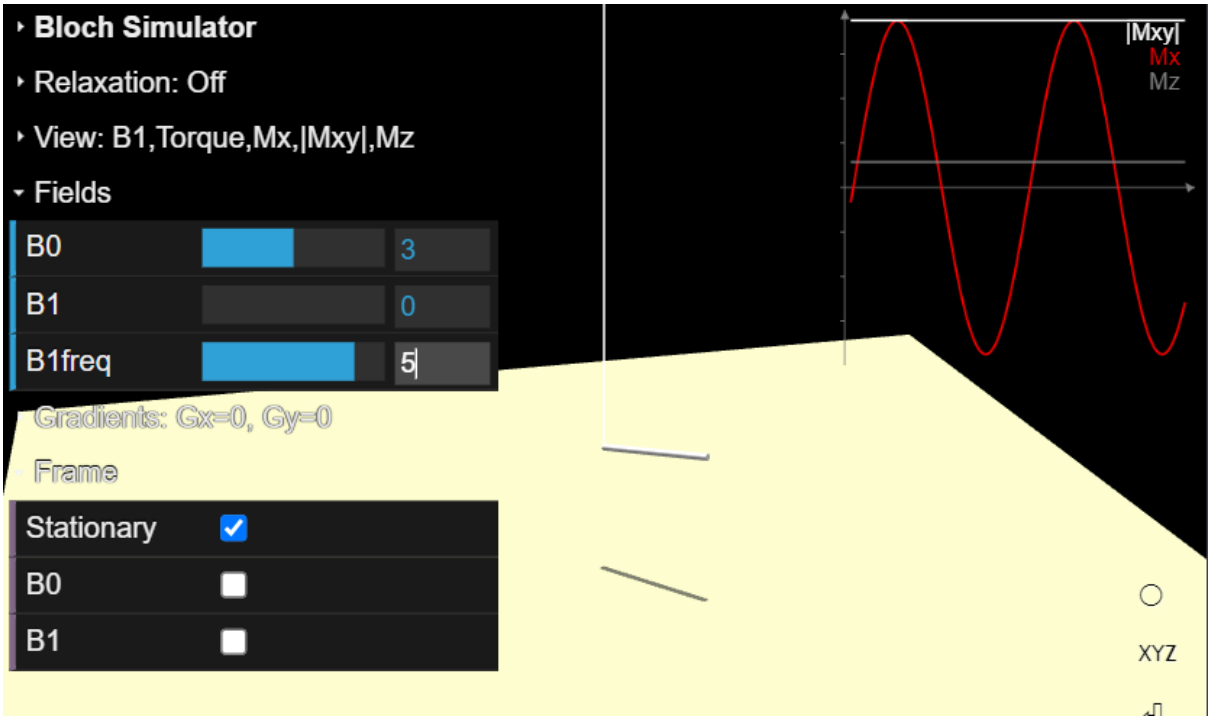
Step 2: Applying the B1 effect and resonant frequency



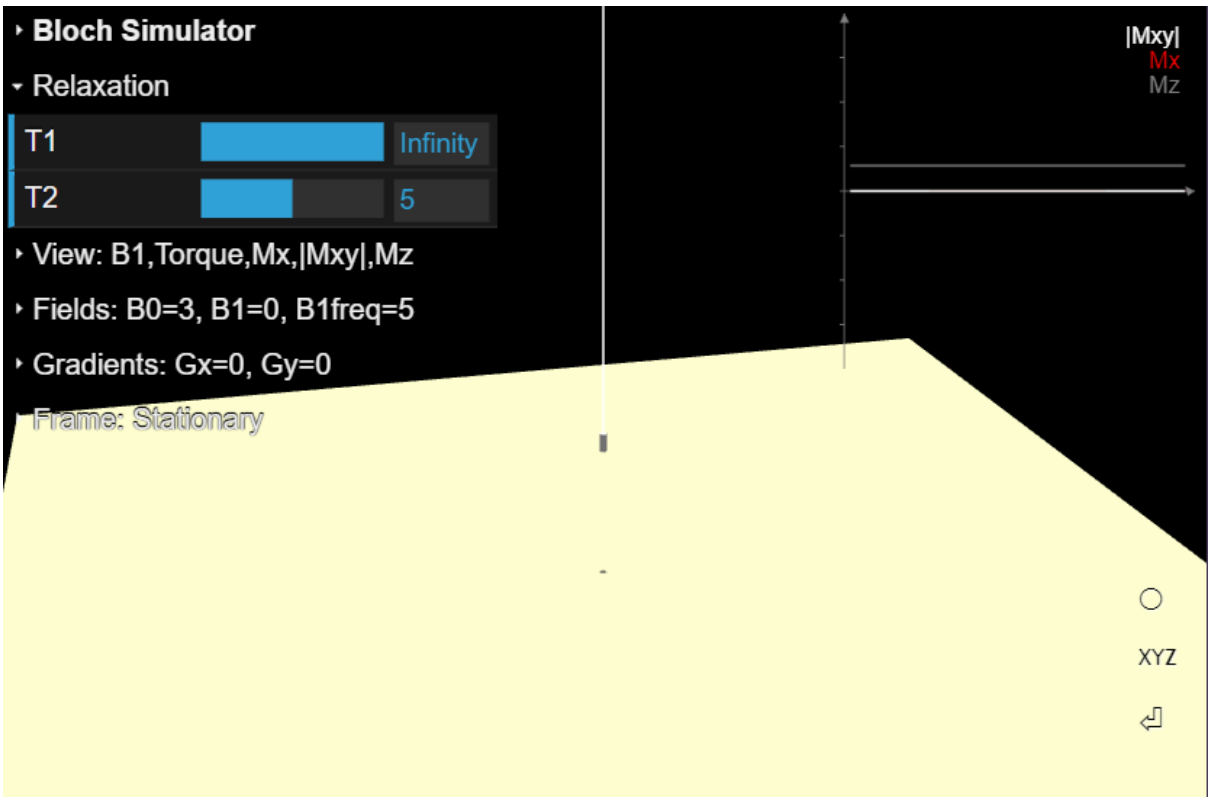


The B1 value makes the torque point to different directions, when it has a high value the tube becomes unstable and rotates in different directions

Step 3:Obtaining a strong signal and turn off B1

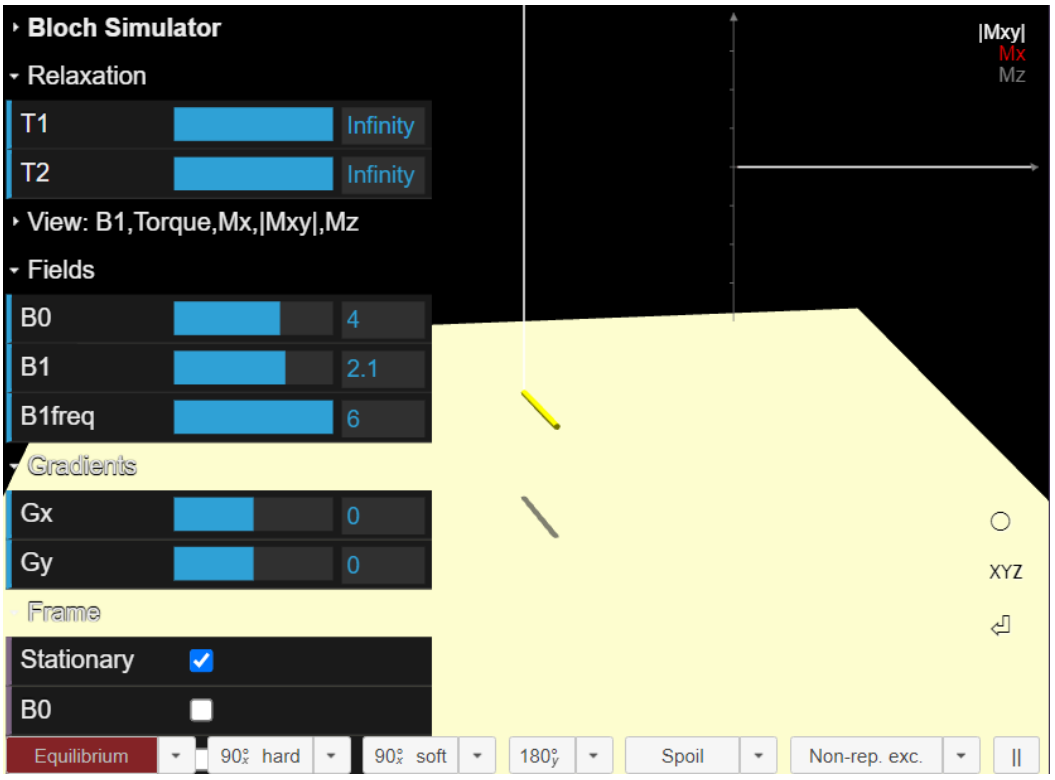


Step 4: Relaxation times



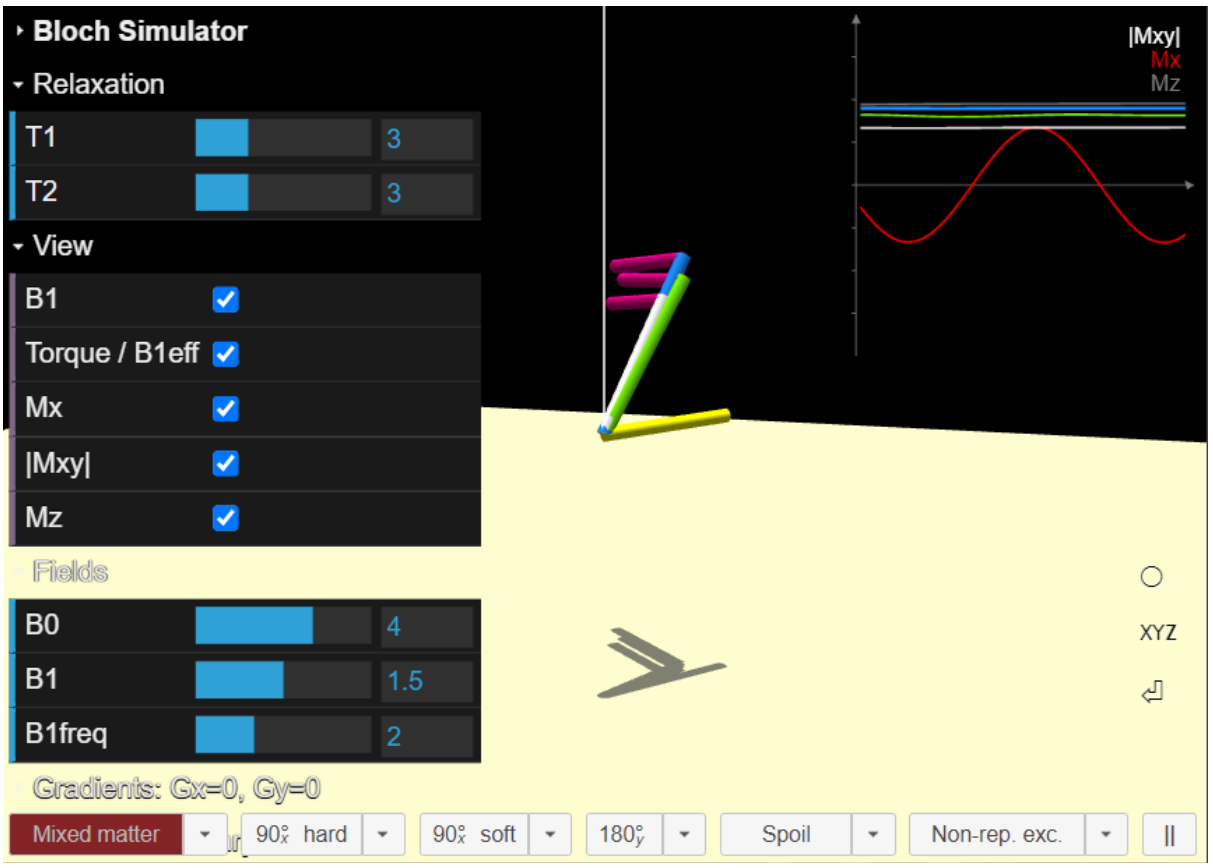
The bar started to stop moving and become smaller and the magnetization decays through the time exponentially

2nd try

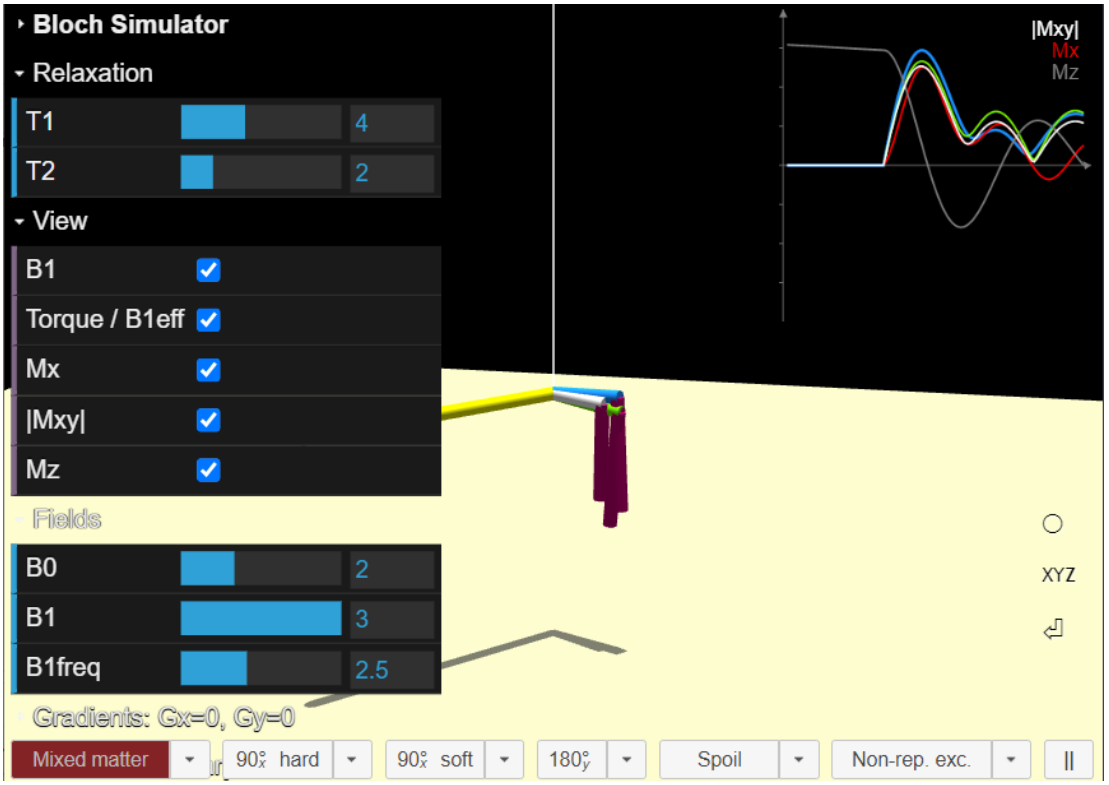


the bar disappeared

Different tissues
Magnetization of all the tissues
changing the values of the fields, and relaxation
1st. try



2nd try

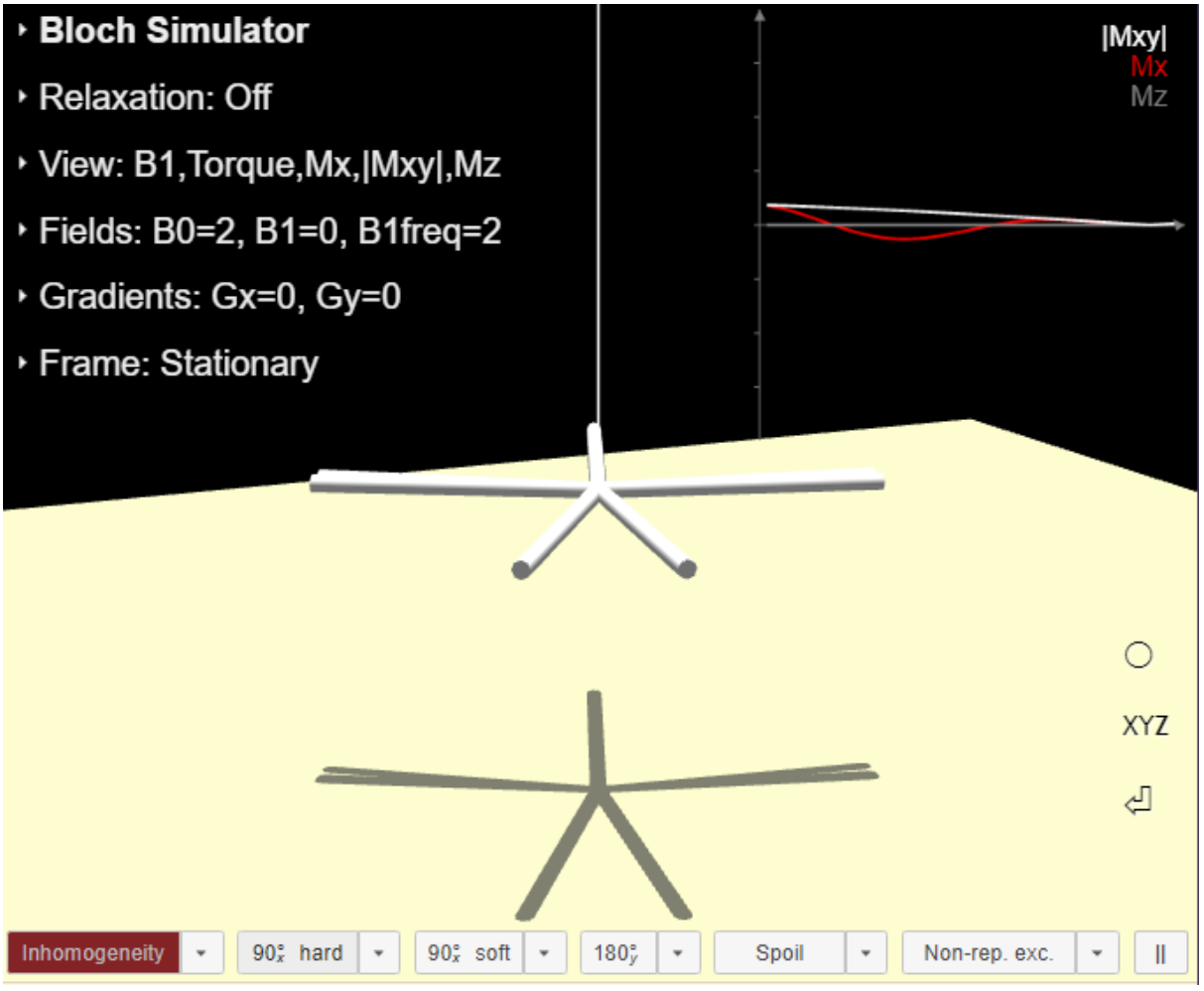


Observations:

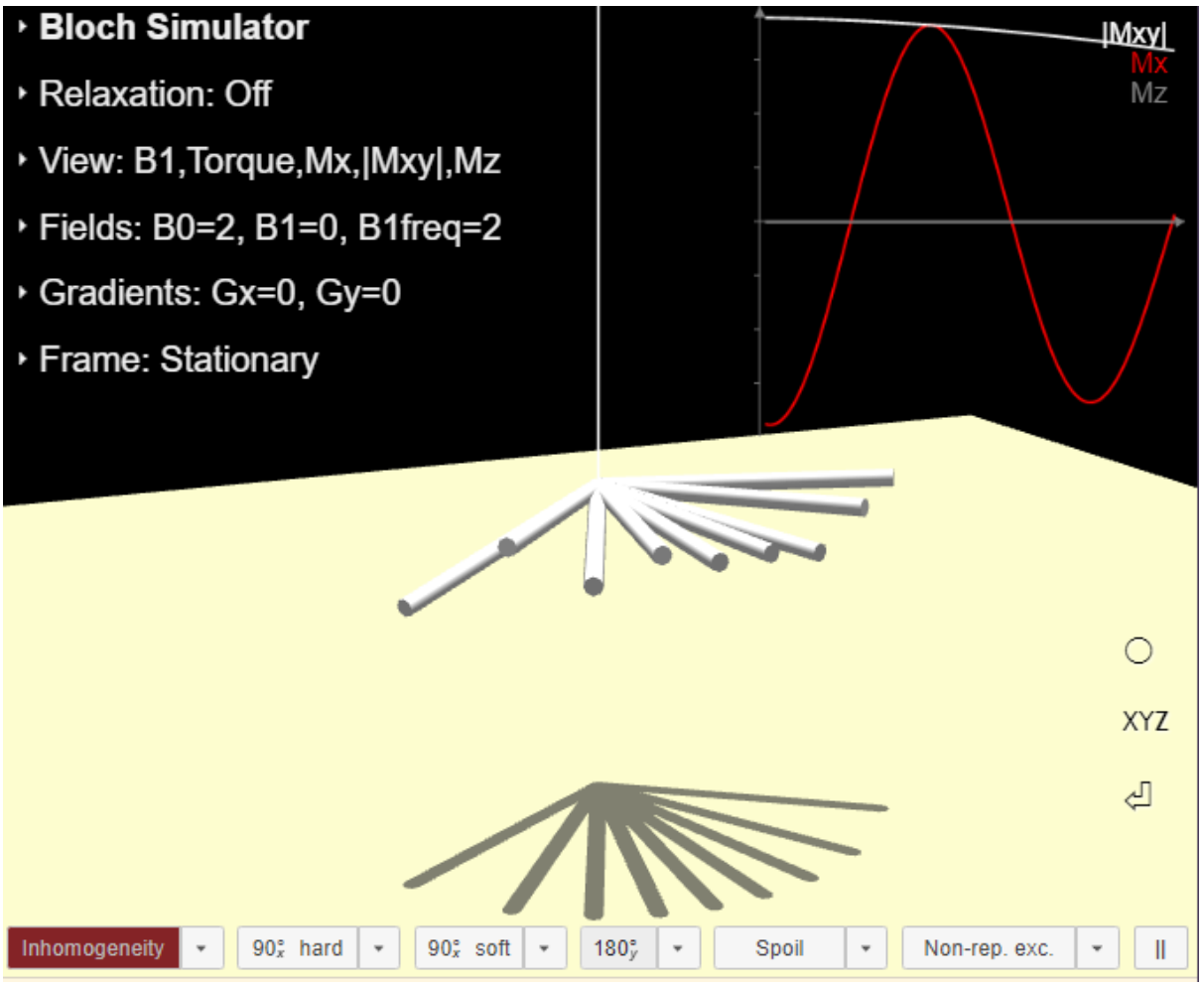
1. Relaxation values:
    a. T1 value can't be smaller than T2, when T1 changes to a small value the graphic starts moving with more energy and then it becomes constant. T2 makes the bar grow and expand, it rotates all over the place when it have a high value and rotates in the origin when it is zero .
2. Field values:
    a. B0 makes the bar rotate faster, B1 enlongates the bar and the magnetization and B1freq states the rise of the bar.
3. Frame:
    a. the B0 moves the torque in different directions.

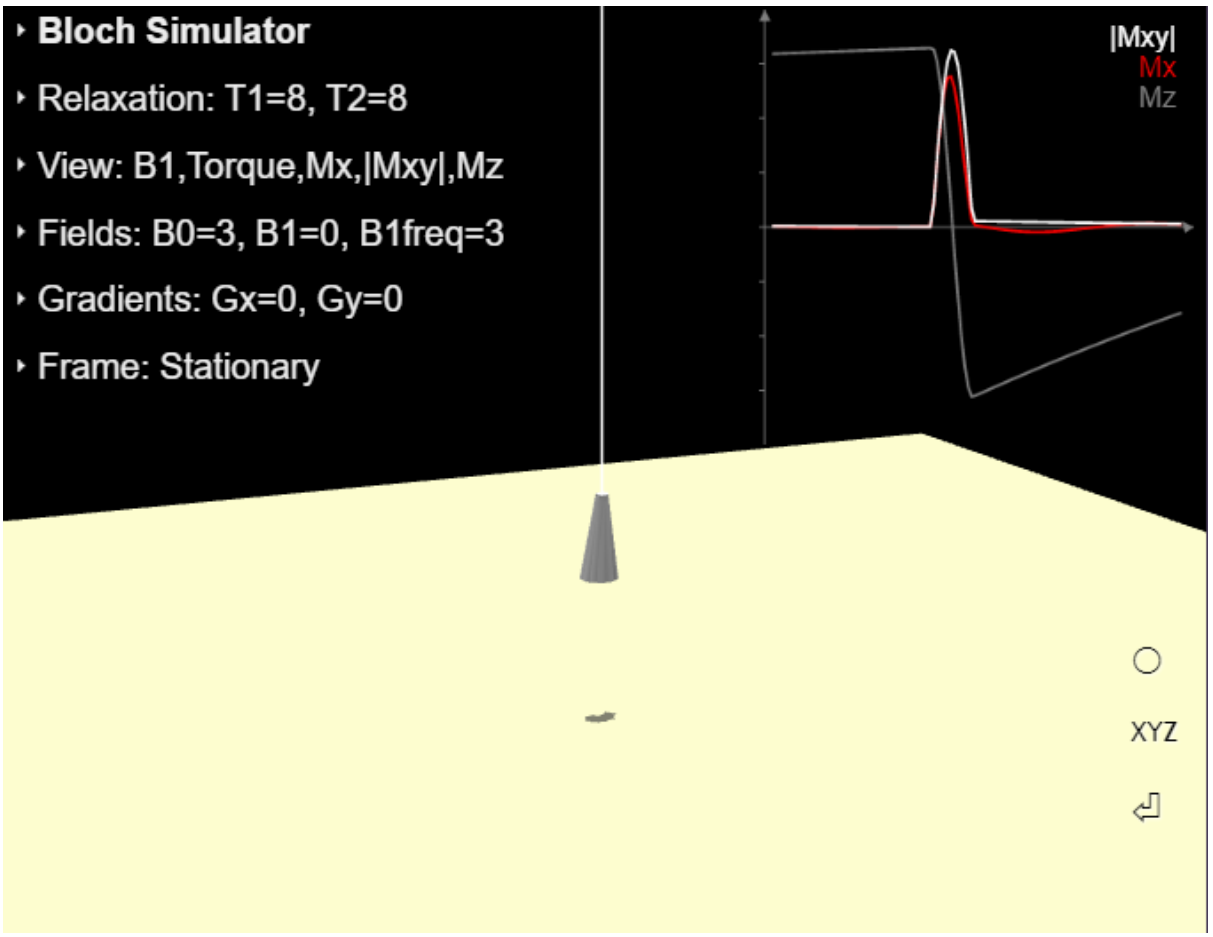
Spin Echo

Step 1: Applying the 90°x hard pulse

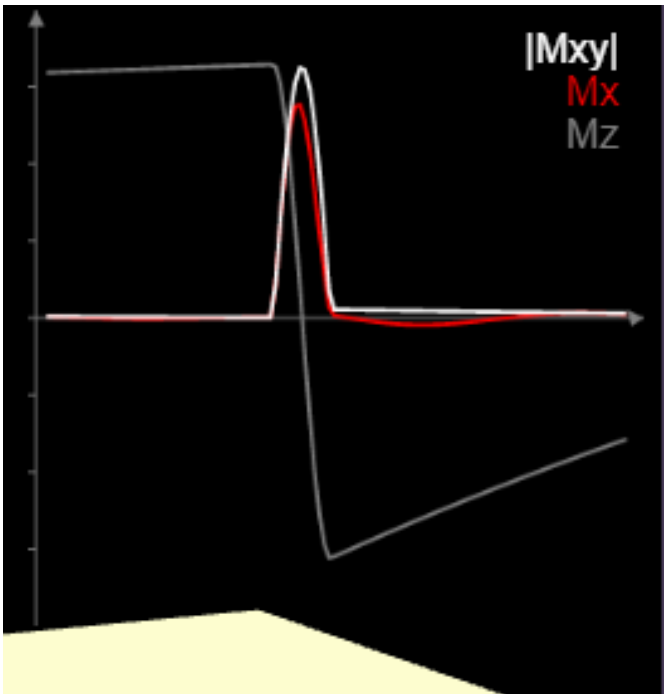


Applying the 180° Pulse


Bloch Simulator
Relaxation: Off
View: B1,Torque,Mx,|Mxy|,Mz
Fields: B0=2, B1=0, B1freq=2
Gradients: Gx=0, Gy=0
Frame: Stationary
|Mxy|
Mx
Mz
XYZ
Inhomogeneity
90x hard
90x soft
180y
Spoil
Non-rep. exc.
||


Bloch Simulator
Relaxation: T1=8, T2=8
View: B1,Torque,Mx,|Mxy|,Mz
Fields: B0=3, B1=0, B1freq=3
Gradients: Gx=0, Gy=0
Frame: Stationary
|Mxy|
Mx
Mz
XYZ

Echo


|Mxy|
Mx
Mz