Hi Professor

This week I focus on the FIRTIP laser mirror adjustment program and 1d fdtd simulation.

As for TIRTIP laser adjustment, there are three lasers needed to control the motor and find to best position of mirror to achieve the maximum output .program will scan the whole range of the mirror position at the initial time when we turn on the laser ,than the power monitor will constantly record the current power and compare with the original maximum power .once the power drop the 15% of original power .the control program will be triggered and scan the vicinity of original maximum position to search for the next best position .that is worked without human intervention. we also could choose manual adjustment by switch to manual mode . However, I haven’t finished the whole control program .I still need a week to achieve it .

As for wave propagation simulation .I have finished the time evolution 1d fdtd code without magnetic field .however when there existed magnetic field ,numerical instability will increase .I still confused if the instability is caused by physical or just that there is no possible to simulate real physics in 1d space under the magnetic field .

By the way , I have rent a new house at here ,since the laser equipment will not send to PPPL until next year March maybe .So I will stay here for later laser testing and experiment .

GPT

Hi Professor,

This week, I focused on the FIRTIP laser mirror adjustment program and the 1D FDTD simulation.

Regarding the TIRTIP laser adjustment, there are three lasers that need motor control to find the best mirror position for maximum output. The program will scan the entire range of mirror positions when we first turn on the laser. Then, the power monitor will continuously record the current power and compare it with the original maximum power. Once the power drops by 15% from the original maximum, the control program will be triggered to scan the vicinity of the original maximum position to find the next optimal position. This process operates without human intervention. We can also choose manual adjustment by switching to manual mode. However, I haven't finished the entire control program yet and still need about a week to complete it.

As for the wave propagation simulation, I have finished the time-evolution 1D FDTD code without a magnetic field. However, when a magnetic field is present, numerical instability increases. I'm still unsure if the instability is physical or if it's impossible to simulate real physics in 1D space under a magnetic field.

By the way, I’ve rented a new house here since the laser equipment won’t be sent to PPPL until next March. So, I will stay here for future laser testing and experiments.