

Short Tripling Pulse Generated by TP-1 triplers?

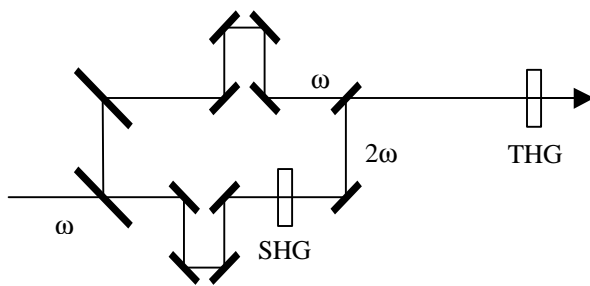
How short the tripling pulse width can be generated by U-Oplaz's TP triplers and what is the influence of the Timeplate to the pulse width of the fundament and SHG pulses? To answer these questions we have measured the pulse width under the controlled conditions.

The results clearly show that the Timeplate (and waveplate) has ignegible broadening to the pulse width of both the fundament and SHG pulses. We believe that pulse width is limited by the thickness of the SHG and THG crystals and Short tripling pulse (~50fs) can be generated with a thinner Time plate (0.5mm) to replace the current Timeplate (2mm) and with thinner SHG and THG crystals.

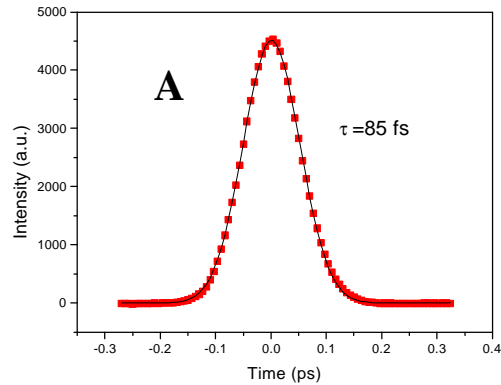
Experiment conditions: Input pulse: 85fs at 790nm, 0.2mm BBO for doubling (SHG), and 0.1mm BBO for measurement (THG). The testing Timeplate and waveplate are 2mm and 0.2mm respectively, standard components in the TP triplers.

Results*:

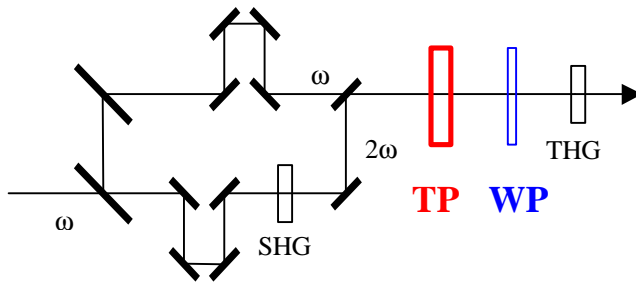
1. No TP and WP (Scheme A): $\tau = 85\text{fs}$.



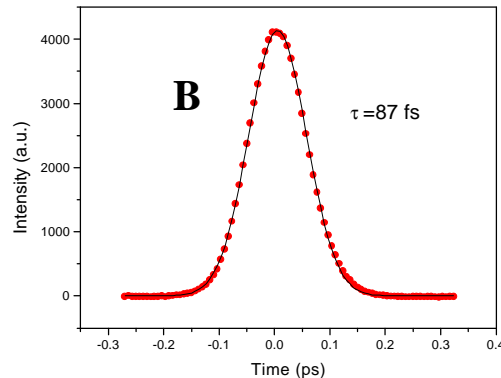
(Scheme A)



2. Having TP(2mm) and WP(0.2mm) inserted (Scheme B): $\tau = 87\text{fs}$.



(Scheme B)



*Assume the fundament and the SHG having the same pulse width and fit the data to gaussian function. The results are in 5% error range.