

# Single-shot multi-frame imaging of femtosecond laser-induced plasma propagation

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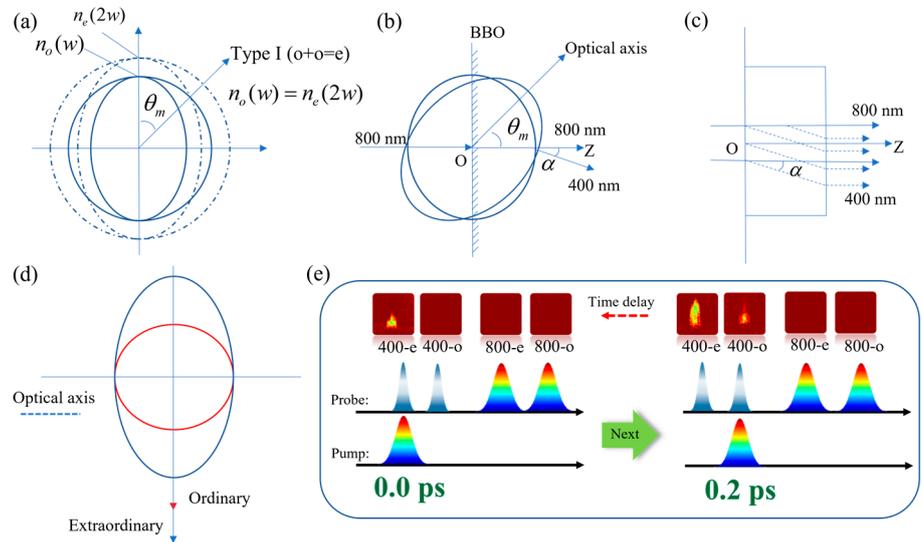
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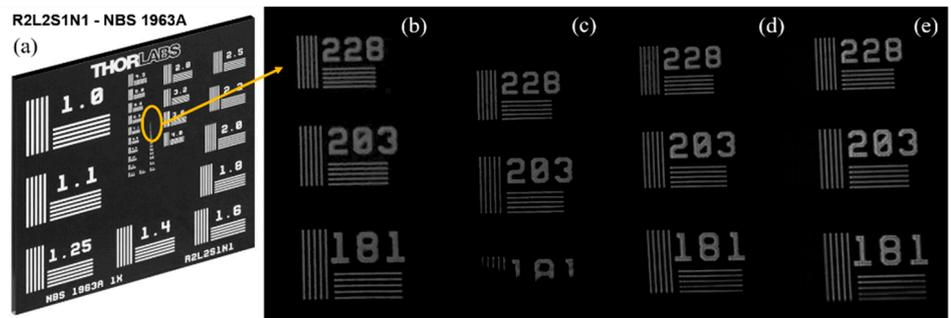
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## 1. Generation of the sub-pulses and definition of the 0.0 ps with the pump pulse



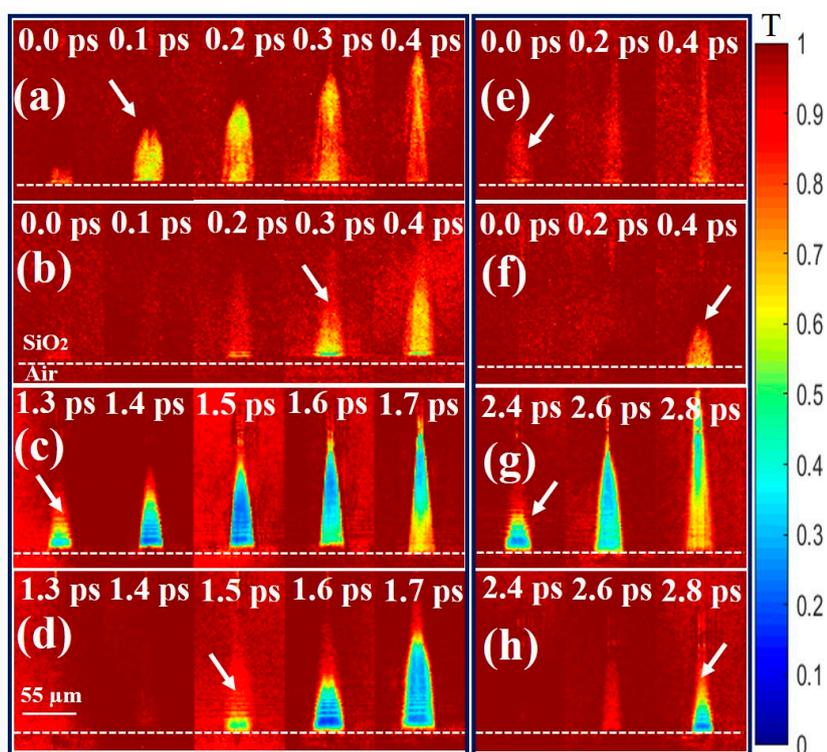
**Figure S1.** Principle of multi frequency and polarization pulse generation. (a) Phase matching method of negative uniaxial crystal; (b) Phase matching angle of the BBO crystal; (c) Spatial walk-off angle of BBO crystals; (d) Birefringence of quartz crystals; (e) The time delay definition of pump and probe sub-pulses.

## 2. Spatial resolution test



**Figure S2.** Spatial resolution test. (a) Standard resolution test target, maximum 228 cycles/mm; (b-e) Imaging results under four sub-pulses

### 3. Adjustment of time resolution



**Figure S3.** Different time resolutions obtained using quartz crystals of different thicknesses on (a-d) 6.4 mm and (e-h) 12.8 mm.