Shaping Laser Pulses with Reinforcement Learning

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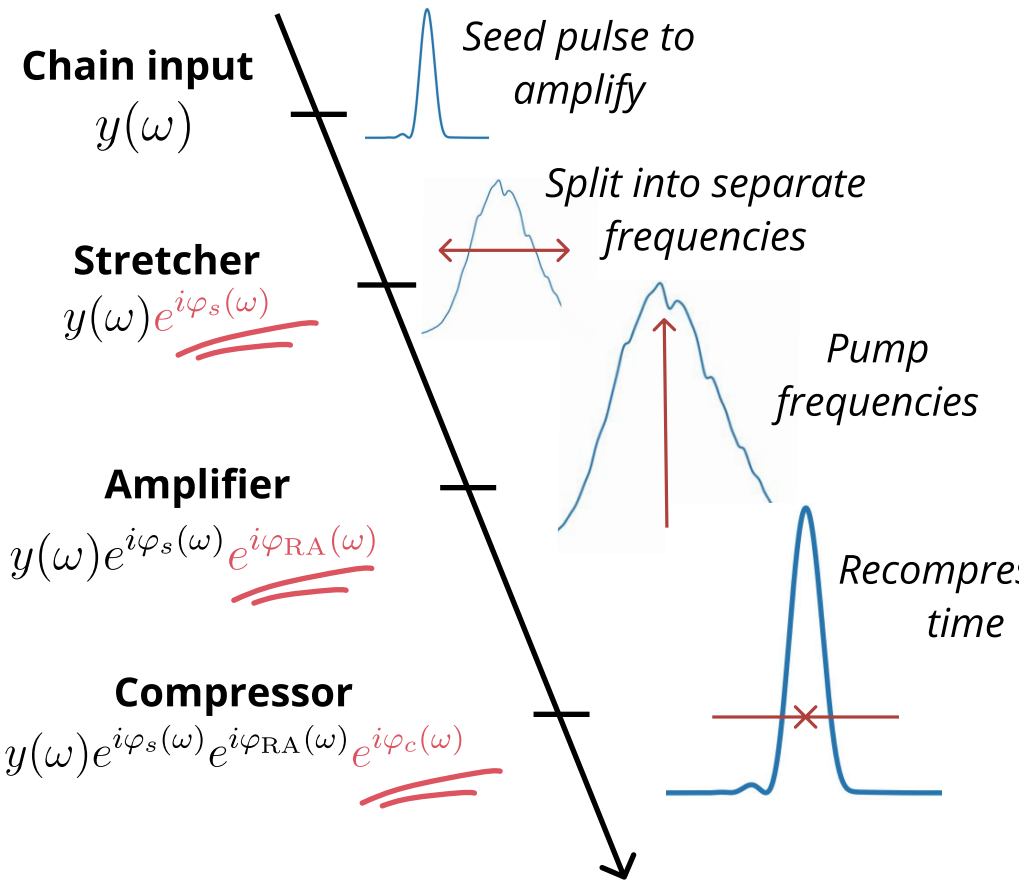
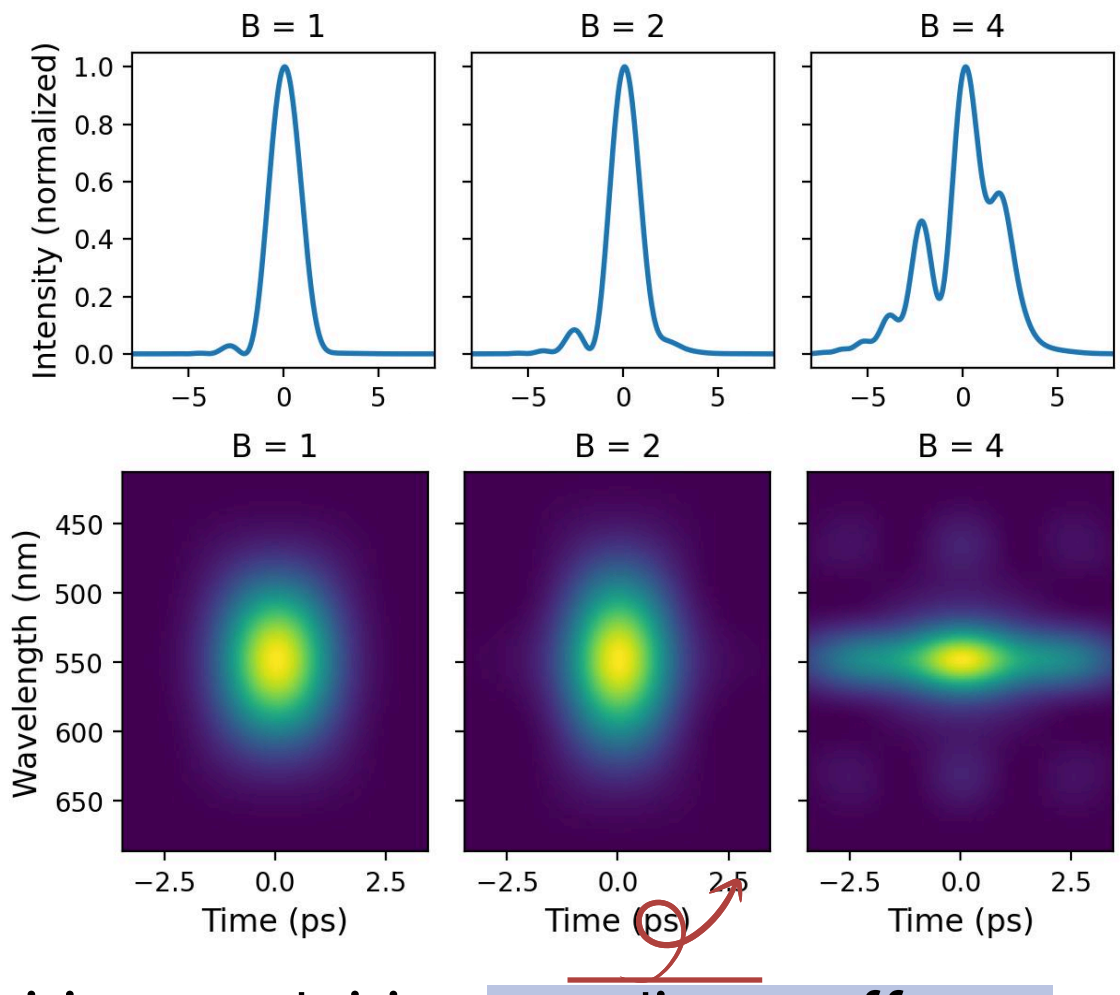
Reinforcement Learning Conference

Attosecond laser pulses are the **shortest event** created by mankind, providing unprecedented insights into light-matter interactions

Background

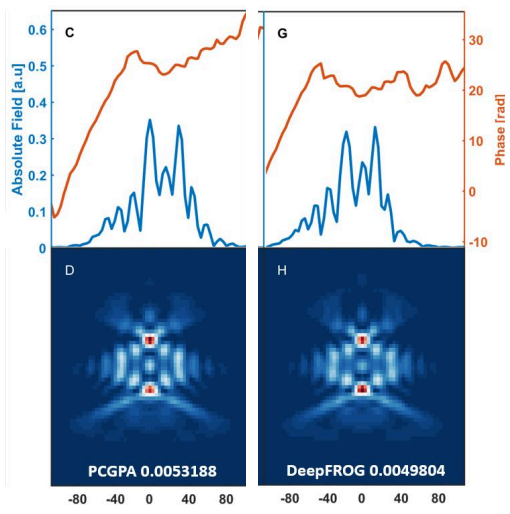




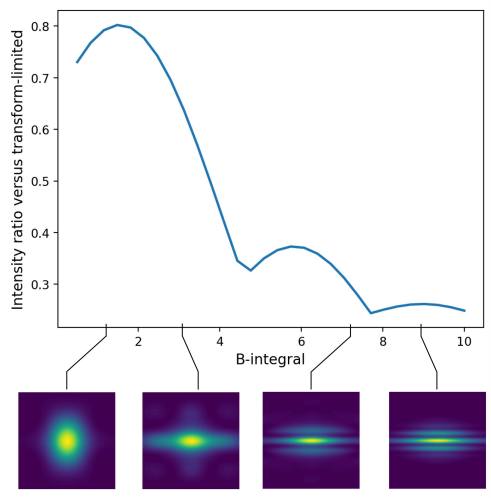
Phase shifts are applied for higher intensities, exploiting non-linear effects.

but,

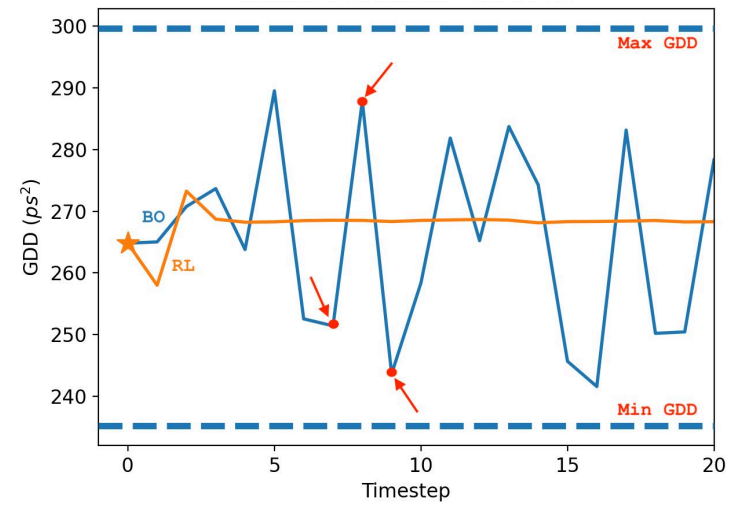
①state estimation



②dynamics

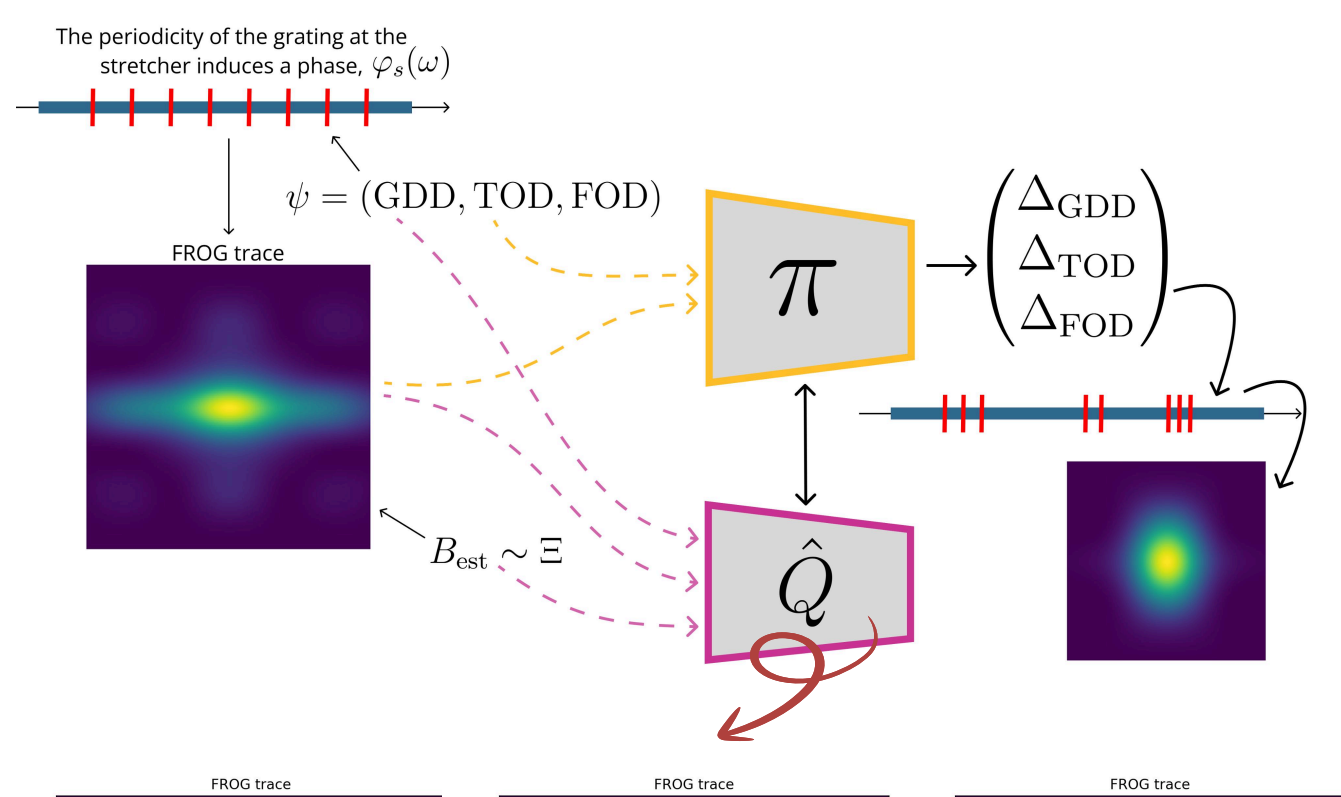


③machine safety

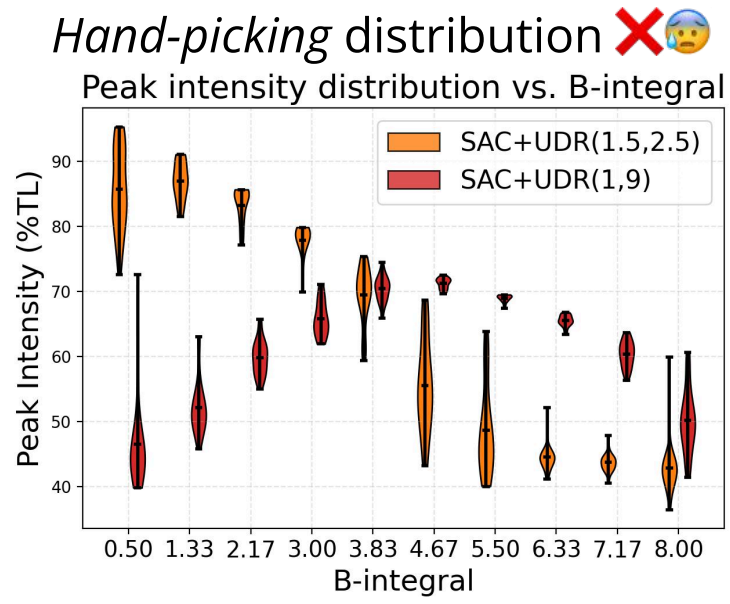


We train a controller to safely tune laser parameters for **intensity maximization**, across dynamics and from images only.

Method



Hand-picking distribution ❌🥶



Adapt while training ✅🤩