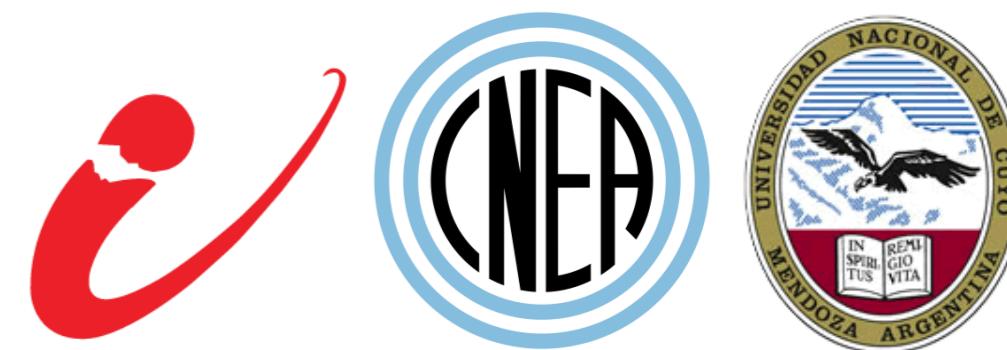


Strong field photoionization: Analysis of overlapping ATI and LAPE structure

Migliaro Candelaria, Della Picca Renata

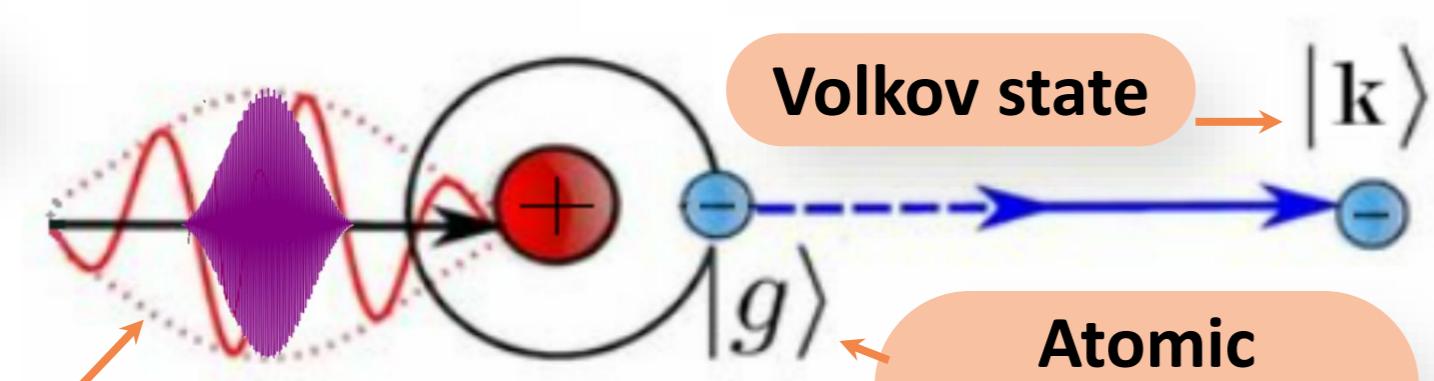
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INTRODUCTION & METHOD

System



ATI: Above Threshold Ionization

Absorbtion of multiple IR photons, more than the energetically required

$$E_n = n\omega - I_P - U_P$$

LAPE: Laser Assisted Photo Emission

Ionization due to an XUV pulse followed by the absorbtion or emission of multiple IR photons

$$E_n = \omega_X \pm n\omega - I_P - U_P$$

TRANSITION MATRICES

$$T_{if} = -i \int_{-\infty}^{\infty} \langle \chi_f^l(\bar{r}, t) | \bar{E} \cdot \bar{r} | \psi_{1s}(\bar{r}, t) e^{iI_P t} \rangle$$

Gordon-Volkov (SFA)

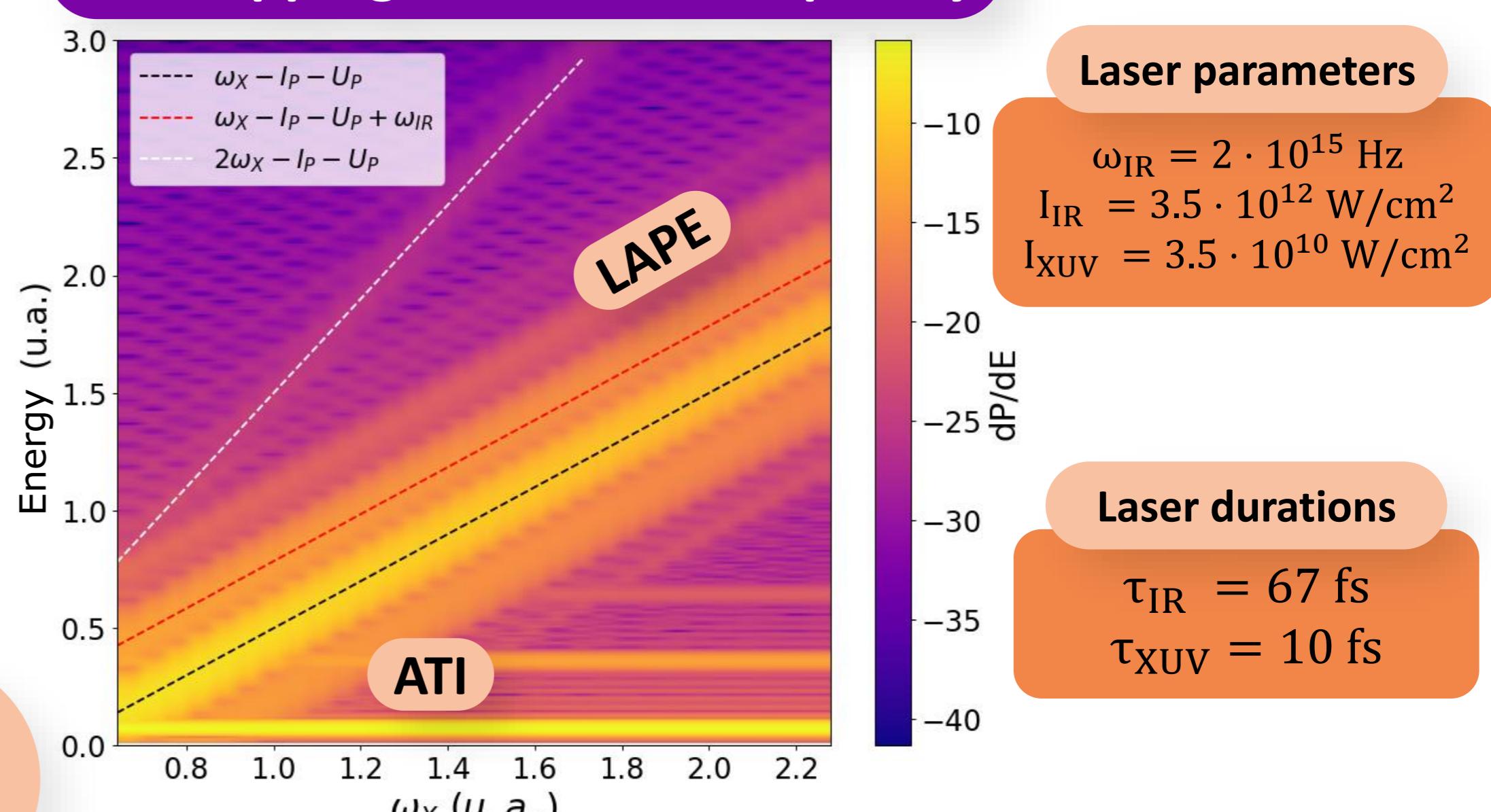
H(1s)

$$T_{if} = T_{if}^{XUV} + T_{if}^{IR}$$

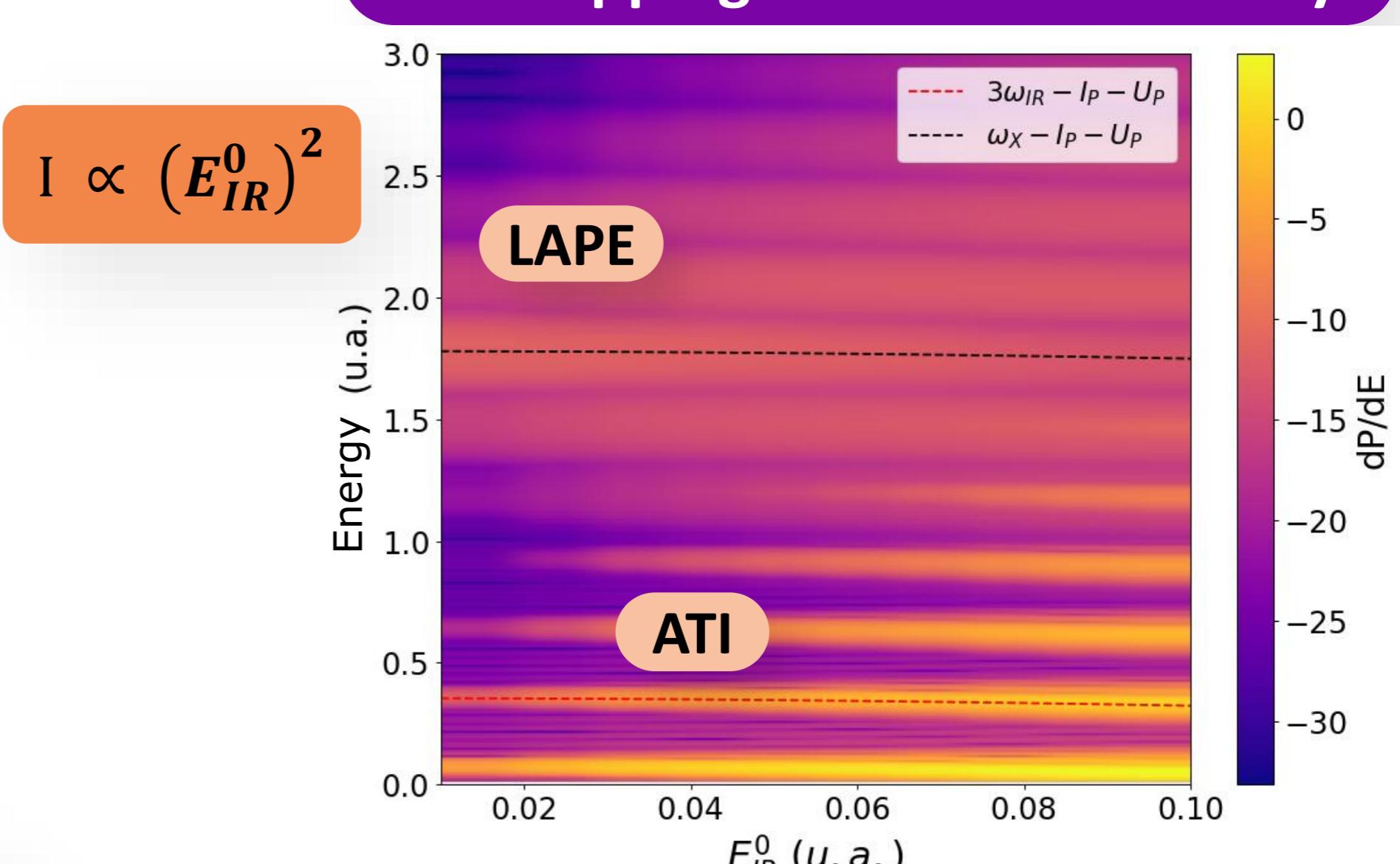
LAPE

RESULTS & DISCUSSION

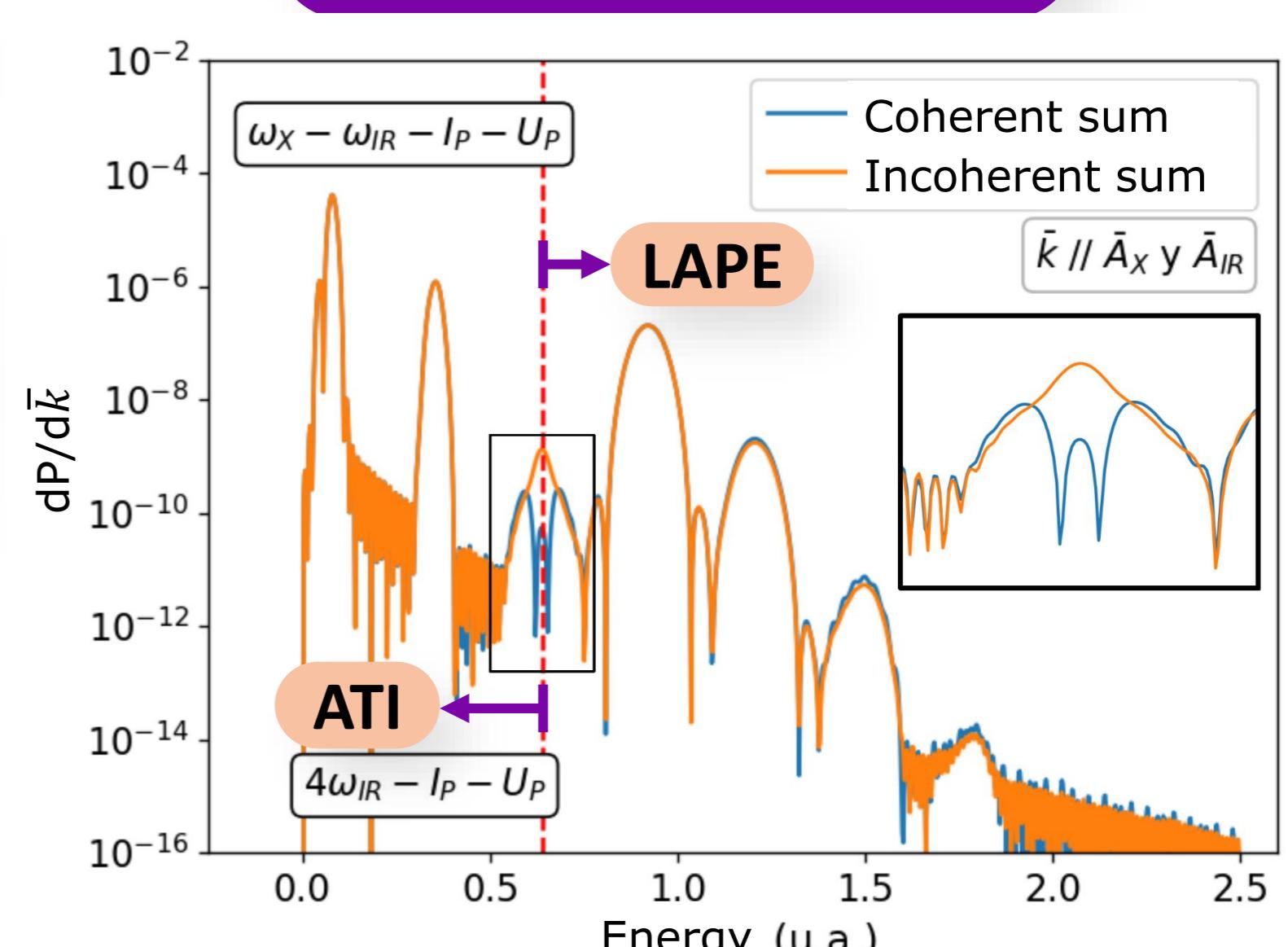
Overlapping because of frequency



Overlapping because of intensity



Possible interference



CONCLUSIONS

- Depending on the laser parameters, ATI and LAPE structures could be superimposed or not.
- ATI and LAPE structures are clearly differentiated across the entire spectrum.
- Only at particular conditions an ATI-LAPE path-interference could be observed.