Contribution ID: **221** Type: **poster**

High Order Harmonic Generation in an Active Grating

Wednesday 3 July 2019 18:00 (2 hours)

High order harmonic generation (HHG) driven by a combination of two or more femtosecond laser fields has lately been thoroughly investigated for its capability to impart specific properties to the outgoing XUV spectrum. Although HHG is a strong field process, the observations were mainly interpreted in terms of photon conservation. Here, we will present a complementary approach based on the analysis of the spatio-temporal structure of the composite driving field at focus. This "wave picture" predicts the same conservation laws as the "photon picture". However, it goes further as it also predicts correct yields and let envision new structuration schemes. These results are supported by theoretical calculations and experiments.

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Session Classification: Poster session 2