Contribution ID: **168** Type: **Oral**

Broad-Band Coherent Perfect Absorption in Systems with a Non-Linear Lossy Component

Coherent perfect absorption (CPA) is a multichannel waveform shaping protocol, which leads to a complete extinction of a monochromatic radiation when it enters a weakly lossy cavity. Its physical origin is traced to wave interference effects that entraps the incident radiation inside the lossy cavity. The CPA is an intrinsic resonance phenomenon. Its validity has been tested in a variety of classical linear-wave settings. Unfortunately, its narrow-band feature deprives us from the possibility to utilize CPA protocols for a variety of important applications like solar photovoltaic or stealth technologies. At the same time, its implementation within the linear-wave framework, constitutes a serious constraint that does not allow us to extend this crucial concept for a variety of practical scenarios associated with high power conditions.

Our current theoretical and experimental results confront these two constrains: using a microwave framework, we show that the CPA protocols are applicable in settings where non-linearity is present (the so-called non-linear CPA, NLCPA). Furthermore, under specific conditions that we have identified, they can lead to a broad-frequency range perfect absorption. Being a generic wave phenomenon, our results might find applications to a variety of technological platforms ranging from mechanical waves (vibrations) and acoustics to microwaves and optics.

Authors: SUWUNNARAT, Suwun (Wesleyan University); TANG, Yaqian (Wesleyan University); REISNER, Mattis (Université Côte d'Azur, CNRS, Institut de Physique de Nice (INPHYNI)); Prof. MORTESSAGNE, Fabrice (Université Côte d'Azur, CNRS, Institut de Physique de Nice (INPHYNI)); Prof. KUHL, Ulrich (Université Côte d' Azur, CNRS, Institut de Physique de Nice (INPHYNI)); Prof. KOTTOS, Tsampikos (Wesleyan University)

Presenter: SUWUNNARAT, Suwun (Wesleyan University)

Track Classification: Optics, Ultrafast Phenomena and Photonics