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Coherent and incoherent Thomson scattering in low-temperature plasmas SEDINA TSIKATA, CNRS - ICARE — In laboratory plasmas, coherent Thomson scattering (CTS) and incoherent Thomson scattering (ITS) can offer insights into electron dynamics which are not readily accessible, or reliably determined, via other diagnostic techniques. In this talk, some new implementations of these tools are discussed. With coherent scattering applied to plasma thrusters and more recently, to planar magnetron studies, we are now able to link microturbulence to global measured parameters (such as discharge current) in a time-resolved way. In incoherent scattering, recently-commercialized, narrow bandstop filters for stray light removal provide new possibilities for measurement. We make use of such a component in a new ITS bench which combines compactness with a high level of sensitivity. In recent work, we have applied this diagnostic to the measurement of electron temperature, density and drift velocity in different environments: to investigate hollow cathode plasma regimes, and to obtain time-resolved electron property measurements during pulsed operation of a planar magnetron. These recent implementations of CTS and ITS provide a path forward for a fuller understanding of the physics of a range of sources.

Sedina Tsikata
CNRS - ICARE

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