

**Plenary Talk**

PV X Thu 9:45 RW 1

**Cavity-based chiral polarimetry: Towards atomic parity non-conservation measurements** — ●T. PETER RAKITZIS — IESL-FORTH, N. Plastira 100, 71110 Heraklion-Crete, Greece — Department of Physics, University of Crete, 71003 Heraklion-Crete, Greece

The measurement of (single-pass) chiral optical rotation or circular dichroism is the most widely used method for chirality sensing, and is of fundamental importance to many fields. However, these chiral signals are typically very weak, and their measurement is limited by larger time-dependent backgrounds (such as spurious birefringence) and by imperfect and slow subtraction procedures. Using a novel bow-tie cav-

ity with an intracavity Faraday Effect, we demonstrate three important improvements: (a) the enhancement of the chiral optical rotation angle by the number of the cavity passes (typically about 1000); (b) the suppression of birefringent backgrounds; and (c) the ability to reverse the sign of the chiral signal rapidly, allowing the isolation of the chiral signal from backgrounds. Using chiral cavity ring-down polarimetry, we have demonstrated the measurement of chiral optical rotation in high-noise environments, such as for open-air gas samples, and for chiral liquids in the evanescent wave produced by total internal reflection at a prism surface. We discuss new fields of application of chiral sensing, and also report progress towards the measurement of parity nonconserving optical rotation in atomic iodine at 1315 nm.