

Novel sources and techniques for precision spectroscopy of cold molecules

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Progress in photonic devices and spectroscopic techniques is adding unprecedented functionalities to precise and sensitive molecular detection [1].

Results will be shown obtained in our group in a wide spectral region, from mid-infrared to THz frequencies [2,3].

These results have been obtained by using frequency comb synthesizers both as broadband/highly coherent sources and as reference/transfer oscillators to stabilize other coherent radiation sources, such as single frequency DFG/OPOs and Quantum Cascade Lasers.

Based on this class of spectroscopic sources and techniques, in conjunction with the emerging methods for direct cooling of stable molecules, we envisage a new generation of tests of fundamental physical laws.

Some cooling techniques and experiments in progress with cold molecules will be discussed [4,5].

References

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