

Spin noise in hot atomic vapors

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Spin noise spectroscopy has recently become a versatile tool to study spin dynamics in several systems, from hot atomic vapors to electron gases in semiconductors. Regarding hot vapors, in particular, spin noise presents a fundamental limitation to the measurement precision in experiments with spin-polarized atomic vapors. While the linewidth of the noise is dominated by collisional relaxation phenomena, it can also be influenced by magnetic gradients. We here explore in detail spin noise linewidth and demonstrate novel effects in spin-noise spectra produced by what can in general be subtle magnetic gradients lurking in the experimental apparatus.

[1] G. E. Katsoprinakis, A. T. Dellis and I. K. Kominis, *Physical Review A* **75**, 042502 (2007).

[2] A. T. Dellis, M. Loulakis and I. K. Kominis, *Physical Review A* **90**, 032705 (2014).