Theoretical analysis of atom interferometry using a modulated laser JOHN ALEXANDER FRANCO VILLAFANE, GEORGINA OLIVARES, YASSER JERONIMO MORENO, EDUARDO GOMEZ, Physics Institute, Universidad Autonoma de San Luis Potosi — Two-photon Raman transition has been a widely used technique in atom interferometry. However, the precision measurements are highly limited by the phase noise between the lasers involved in the Raman transition. To overcome this limitation atom interferometry using modulated Raman laser has been demonstrated experimentally recently in both counter- and co-propagating beams configuration. The theoretical analysis of this technique is far from being well understood. In this work, we will present an overview of the main challenges in the theoretical analysis of an atom interferometry using a modulated Raman laser. Some analytical solutions in limit cases are presented in counterpropagating configuration.

John Alexander Franco Villafane
Physics Institute, Universidad Autonoma de San Luis Potosi

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