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Investigation of magic wavelengths for Francium atom with linearly, circularly and elliptically polarized light SUKHJIT SINGH, BINDIYA ARORA, Department of Physics, Guru Nanak Dev University, Amritsar, Punjab, India, B. K. SAHOO, Atomic, Molecular and Optical Physics Division, Physical Research Laboratory, Navrangpura, Ahmedabad, India — Various techniques for laser cooling of atoms have recently become of much interest and are immensely used in modern experiments for carrying out very high precision measurements. In a remarkable work, Katori et. al. in 1999 had explored the use of magic wavelengths (λ_{magicS}) for Sr atoms, at which the investigated transition of the trapped atoms observes null Stark shifts, to reduce the systematics in the measurements. We intend to investigate λ_{magicS} for D1 and D2 lines of Francium(Fr) atom with linearly, circularly and elliptically polarized light. Use of circularly polarized light can be advantageous in increasing the number of λ_{magicS} and using elliptically polarized light can lead to identify λ_{magicS} independent of magnetic sublevels and hyperfine levels.

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