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Theoretical and experimental study of sub-Doppler DAVLL for D1 lines of ^{87}Rb and ^{85}Rb atoms GYEONG WON CHOI, HEUNG RYOUL NOH, Chonnam National University — A theoretical and experimental study of lineshapes in sub-Doppler DAVLL (dichroic atomic vapor laser lock) for the D1 transition line of ^{87}Rb and ^{85}Rb atoms was presented. The induced dichroism in a rubidium vapor due to a linearly polarized pump beam was measured using a counter-propagating probe beam in the presence of an external magnetic field. We compared measured sub-Doppler DAVLL spectra with calculated results using rate equations, and found a good agreement between them. We also studied the coherence effects in the lineshape of sub-Doppler DAVLL and found that the branching ratio played an important role in resulting significant effect of the coherence term.

Gyeong Won Choi
Chonnam National University

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